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STATISTICS
OF
COAL IN ILLINOIS
1893.

TWELFTH ANNUAL REPORT.

A SUPPLEMENTAL REPORT

OF THE

STATE BUREAU OF LABOR STATISTICS.

CONTAINING THE

Tenth Annual Reports of the State Inspectors of Mines.

GEORGE A. SCHILLING, *Secretary*.

SPRINGFIELD, ILL.:
H. W. BOKKER, STATE PRINTER AND BINDER.
1894.



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COAL IN ILLINOIS.

This report contains the twelfth annual compilation of the statistics of the coal industry in Illinois for the year ending July 1, 1893. It includes all the general features of former reports, and presents the yearly aggregation of facts concerning the industry gathered by the five State inspectors of mines, under direction of the Bureau, and conformable to a provision in the general mining law of the State.

The detailed particulars concerning each mine in its operation during the year are reported to the inspectors, on blanks specially prepared by the Bureau, and filled in by the owner or operator of the different mines, from the records of their office; therefore, all statements relating to the industry comes from the highest and best authority, and forms the ground-work for all inferences and conclusions contained in the report. While the usual order of former reports, which have been so efficiently presented, will be maintained, some additional matters are introduced consequent of a desire for further information concerning some conditions, not heretofore reported.

Among the most important of them, is a full statement of the workings of the gross-weight law for the past two years; the payment of wages, weekly, semi-monthly or monthly; the location, number and rules regarding "truck stores;" the number of men working under ground and above ground, cost of mining material, and some minor items which will be found noted in their proper place.

THE RECORD FOR 1893.

The entire coal industry of this State for the year 1893 is comprehensively presented in the following summaries of totals and averages:

Number of counties in which coal has been mined.....	56
Number of mines and openings of all kinds.....	788
Number of tons of coal of all grades mined.....	19 949,564
Number of tons of lump coal (2,000 pounds).....	16,112,899
Number of tons of other grades of coal.....	3,836,665
Number of tons of nut coal included in other grades.....	576,965
Number of acres worked out—estimated.....	3,109.07
Number of employés of all kinds.....	35,390
Number of miners.....	26,145
Number of other employés, including boys.....	9,245
Number of boys over 14 years of age under ground.....	854
Number of employés under ground.....	31,584
Number of employés above ground.....	3,806
Average number of days of active operations, shipping mines..	229.4
Aggregate home value of total product.....	\$17,827,595
Aggregate home value of lump coal.....	\$16,517,960
Aggregate home value of other grades of coal.....	\$1,314,635
Average value of lump coal per ton at the mines.....	\$1.025
Average value of other grades of coal per ton at the mines...	\$0.3427
Average price paid per ton for hand-mining.....	\$0.7145
Average price paid for hand-mining—summer.....	\$0.6739
Average price paid per ton for hand-mining—winter.....	\$0.722
Number of tons of lump coal mined by hand.....	8,146,646
Number of tons mined by hand and paid for by the day.....	1,775,211
Number of tons mined by hand and paid gross weight.....	5,961,289
Number of mining machines in use.....	310
Number of tons of all grades mined by machines.....	4,729,749
Number of tons of lump coal mined by machines.....	3,631,029
Number of tons of other grades mined by machines.....	1,098,720
Number of kegs of powder used.....	353,772
Number of men killed.....	69
Number of wives made widows.....	32
Number of children made fatherless.....	106
Number of men injured so as to lose time.....	403
Number of tons of coal mined for each life lost.....	289,124
Number of tons of coal mined for each man injured.....	49,503
Number of employés for each life lost.....	513
Number of employés for each man injured.....	88
Number of new mines opened, and old mines re-opened....	70
Number of mines closed or abandoned.....	120

The number of counties contributing to the product this year is one more than last year; the counties in the First, Second and Third districts producing coal are the same as reported last year, and for the past ten years; the Fourth district adds two, Cumberland and Jasper, but with a very small tonnage

from each; while the Fifth district drops out Johnson county. Although 56 counties are reported as producing coal, almost the entire output comes from 48 counties. In the Fourth district 5 counties, Cumberland, Effingham, Jasper, Pike and Richland, report only 520 tons, and 3 counties in the Fifth district, Franklin, Hamilton and Jefferson, add only 454 tons; the total product of these counties being less than 1,000 tons, their entire omission would not materially affect the total tonnage.

There has been a marked decrease in the number of mining places during the past four years. In 1890 the number of mines reported in the State was 936; this was a gain of 82 over the previous year, and the largest number ever reported. This increase seemed to be reasonable, as the output of coal for the year had increased over one and a quarter million tons. In 1891 the number of mines had decreased by 18, but the product had increased 385,971 tons. Last year, 1892, the decrease in the number of mines was greater than in any other year, the number being 79 less than reported for 1891, while the increase in output was 2,201,578 tons. This year records a further decrease in the number of mines, being 51 less than last year, yet the product increases 2,087,288 tons. Notwithstanding the number of mining places this year is 148 less than in 1890, the output of coal is over four and a half million tons in excess of that year, and seems to point conclusively to the abandonment of the smaller mines as undesirable and unprofitable, and to the concentration of the business to the larger and improved class of plants.

The unprecedented output of the year over all previous years is prominent in this report, aggregating as it does 19,949,564 tons of 2,000 pounds each. 16,112,899 tons of this product was lump coal, and 3,836,665 tons of other grades. Of the latter there is reported from the First, Second, Fourth and Fifth districts, 576,965 tons as being nut coal; this is nearly 18 per cent of the other grades reported from these districts.

The lump coal has an average value this year essentially the same as the year before, \$1.03 per ton; the computation of last year having the decimal of a cent in its favor. The price paid for hand-mining is practically on a level with that of last year, being 71.45 cents, and is computed on screened tons,

mined exclusively by hand and paid for by the ton. The number of tons on which this price is based is 6,061,413, or only a little over 37 per cent. of the total tons of screened coal. The diverse methods adopted in recent years for paying for mining coal has rendered the foregoing average of little significance, as a basis on which to estimate the earnings of miners generally.

The number of employés in and about the mines exceeds that of all previous years, and is 1,758 more than reported last year, and 2,439 more than 1891. To this can be added the record of 229.4 days of active operations for all mines designated as shipping mines. This is a greater number of days than has been reported for the past decade.

Mining coal by machine seems to be steadily increasing; the number of machines reported this year is 310, last year the number was 300, and the year before 241. The number of tons cut by machines during the year was 4,729,749; this is an increase over last year of 836,460 tons, and 1,702,444 tons more than reported for 1891.

The increase in the consumption of powder during the year has been quite marked; a total of 353,772 kegs, of 25 pounds each, of this explosive power has been used. This is 54,305 kegs more than reported for last year, and 92,380 more than used in 1891.

The number of men killed has, unfortunately, exceeded that of any year in the history of coal mining in the State, since the exceptional calamities of 1883, when by two accidents 79 men lost their lives, 69 by the flooding of a mine at Braidwood and 10 others by an explosion in a mine at Coulterville. The number of fatal casualties reported for the year is 69, this is 12 more than last year, and 9 more than given for 1891. The large increase in the tonnage and in the number of the employés the present year would in consequence augment the number of fatalities. However, an examination reveals the fact that while the tonnage of this year has increased 12 per cent. over that of last year, and the number employed 5 per cent., the fatal casualties have increased 21 per cent. The number of men employed to one man killed is 513. This is the smallest proportion in ten years, excepting one year, 1886, when the number was 497. The number of tons mined to one life lost is 289,124;

last year there was one death for every 313,373 tons, the year before one for every 261,011 tons.

The estimated number of acres from which coal has been removed during the year is 3,109; this is over 100 acres more than reported last year, and 375 acres more than was worked out in 1891.

The year 1893 has been one of marked activity; all of the inspectors report extensive and valuable improvements in the larger plants throughout the State, both in buildings and machinery on the surface, as well as the betterment of the conditions under-ground. Very little friction has arisen during the year affecting the relations between the operators and men employed; in this regard it has been a year of comparative quiet, and naturally of unusual prosperity in the coal industry.

NUMBER AND RANK OF MINES.

Some noticeable changes are presented in the following division and grouping of mines arranged as to product of lump tons; those of the same classes for the two previous years are similarly placed with those of this year.

DISTRICTS.	NUMBER OF MINES PRODUCING—																	
	Less than 1,000 tons.			From 1,000 to 10,000 tons.			From 10,000 to 50,000 tons.			From 50,000 to 100,000 tons.			Over 100,000 tons.			Total number of mines.		
Years	1891	1892	1893	1891	1892	1893	1891	1892	1893	1891	1892	1893	1891	1892	1893	1891	1892	1893
First.....	13	11	12	19	21	23	17	13	15	12	12	10	9	13	11	70	70	71
Second.....	169	148	131	76	72	71	13	12	12	2	3	4	4	5	6	264	240	224
Third.....	125	108	96	91	82	74	45	49	52	9	13	11	3	4	3	273	256	236
Fourth.....	39	27	21	34	28	29	26	20	14	16	22	26	11	12	14	126	109	104
Fifth.....	59	41	25	43	39	40	61	60	53	18	19	29	4	5	6	185	164	153
The State.....	405	335	235	263	242	237	164	154	146	55	69	80	31	39	40	918	839	788
Increase.....	....	....	....	....	....	....	....	....	....	....	14	11	....	8	1	....	22	12
Decrease.....	....	70	50	....	21	5	....	10	8	....	....	....	....	....	....	....	101	63
Per ct. increase..	....	....	....	....	....	....	....	....	....	25.6	15.9	....	....	25.8	2.6	....	....	....
Per ct. decrease..	....	17.3	14.9	....	8	2.1	....	6.1	5.2	....	....	....	....	....	....	....	8.6	6.08

Dividing the groups into two classes, it is observed that the number of mines whose output is less than 50,000 tons has decreased 63, and that the number of mines producing more than 50,000 tons has increased 12; the ratio of increase last year was considerably in excess of this year. Taking the last two

years together, it is shown that the decrease in the number of smaller mines has been 166 from the number reported in 1891; of these 120 produce 1,000 tons or less each, and are mainly reported in the second, third and fifth districts.

The number of mines of the greater output has increased 36, of which 9 are mines producing over 100,000 tons; 29, or 80 per cent. of the latter class are reported in the Fourth and Fifth districts. The net decrease in the number of mines in the State has been 130 in the last two years. (To further demonstrate the diminution in the number of smaller mines and the increase in the larger and better class of plants the following table is presented, for the past eleven years:

YEARS.	NUMBER OF MINES PRODUCING—					Total number of mines.
	Less than 1,000 tons.	From 1,000 to 10,000 tons.	From 10,000 to 50,000 tons.	From 50,000 to 100,000 tons.	Over 100,000 tons.	
1883.....	209	233	133	39	25	639
1884.....	262	273	148	38	20	741
1885.....	286	290	143	40	19	778
1886.....	316	280	135	44	14	789
1887.....	320	278	141	42	20	801
1888.....	327	271	151	47	25	822
1889.....	321	316	139	55	23	854
1890.....	398	301	155	54	28	936
1891.....	405	263	164	55	31	918
1892.....	335	242	154	69	39	839
1893.....	285	237	146	80	40	778
Increase.....	76	4	13	41	15	139
Per cent of increase.....	36.4	1.7	9.8	10.5	60	21.8

It will be observed that the number of mines comprising the class producing 50,000 tons and over, for the years represented, has largely increased in the past two years, and is now more than double the number reported ten years ago. In 1890 there were 82 mines in this class, this year 120, an increase of 38; of these, 12 are mines producing over 100,000 tons. During the same time the smaller mines have decreased in nearly like proportion, the number in 1890 being 854, and this year 668, a decrease of 186; of these 113 are mines reporting an output of less than 1,000 tons.)

The development of the larger and better class of mines is made more apparent in the following table:

DISTRICTS.	MINES PRODUCING—								TOTAL NUMBER OF MINES AND TONS.	
	OVER 100,000 TONS LUMP COAL.		FROM 50,000 TO 100,000 TONS.		FROM 10,000 TO 50,000 TONS.		LESS THAN 10,000 TONS			
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
First	11	1,613,701	10	746,284	15	456,895	35	96,264	71	2,913,144
Second.....	6	924,448	4	301,726	12	238,436	202	244,299	224	1,708,969
Third.....	3	459,365	11	806,376	52	1,288,553	170	306,005	236	2,860,299
Fourth.....	14	2,265,649	26	1,764,297	10	395,413	50	83,023	104	4,508,382
Fifth.....	6	748,308	29	1,933,574	53	1,299,942	65	140,341	153	4,122,165
The State.....	40	6,011,471	80	5,552,257	146	3,674,239	522	869,932	788	16,112,899
Percentage, 1895.....	5.1	37.3	10.2	31.5	18.5	22.8	66.2	5.4	.....	.....
Percentage, 1892.....	4.6	37.6	8.2	31.8	18.4	24.3	68.8	6.3	.....	.....
Percentage, 1891.....	3.4	83	6	29.6	17.9	29.1	72.8	8.3	.....	.....
Mines and averages, 1893.	40	150,287	80	69,443	146	25,200	522	1,667	788	20,448
Mines and averages, 1892.	39	142,077	69	67,787	154	23,272	577	1,610	839	17,558
Mines and averages, 1891.	31	137,855	55	69,445	164	23,915	668	1,564	918	14,118

Continuing the division of the mines into the two classes it is observed that 668, or 85 per cent. of the mines whose output is less than 50,000 tons each, contributed only 28 per cent. of the tonnage, last year on the same division the percentages were 84 and 30.6 respectively. Of the class of smaller mines, there are 522 or 36 per cent. of the whole that have produced less than 10,000 tons each. or only 5.4 per cent. of the total product, thus awarding to 263 mines, or 34 per cent. of the whole the yielding of 94.6 per cent. of the total tonnage of the State. The conclusion to be reached from the facts set forth in this table for this year, viewed in connection with those of 1891-2, points conclusively to the unequalled showing of the year in these particulars. The increase, as shown by the percentages of mines and tonnage, is with the higher grade of mines and a corresponding decrease in the lower grades, and a like proportion is seen in the average products of all the classes.

Extending the comparison, the following table of the two classes of mines for seven years, is presented:

YEARS.	MINES PRODUCING OVER 50,000 TONS OF LUMP COAL.					MINES PRODUCING LESS THAN 50,000 TONS OF LUMP COAL.				
	No. of mines.	Total tons.	Average No. of tons per mine.	Per cent of whole No. of mines.	Per cent of total product.	No. of mines.	Total tons.	Average No. of tons per mine.	Per cent of whole No. of mines.	Per cent of total product.
1887.....	62	5,949,894	95,966	7.74	57.90	739	4,328,996	5,858	92.26	42.10
1888.....	72	7,188,507	99,840	8.76	60.64	750	4,666,681	6,222	91.24	39.36
1889.....	78	7,235,577	92,764	9.13	62.39	776	4,362,386	5,622	90.87	37.61
1890.....	81	8,011,777	98,911	8.65	63.39	855	4,626,587	5,411	91.35	36.61
1891.....	86	8,109,485	94,296	9.37	62.57	882	4,850,739	5,883	90.63	37.43
1892.....	108	10,218,279	94,614	12.87	69.37	731	4,512,684	6,173	87.13	30.63
1893.....	120	11,563,728	96,364	15.23	71.77	668	4,549,171	6,810	84.77	28.23
Averages.....	87	8,325,321	96,009	.....	.....	764	4,556,749	6,148	.....	.....
Percentages...	.....	.....	.....	10.19	64.63	.....	.....	.....	89.81	35.37

Here is demonstrated the steady increase in the number of larger mines and their product during the series of years, and a like decrease in the smaller mines. The increase in the better class of mines and their output in the past two years is very marked; this year 15.23 per cent. of the whole number of mines produced over 50,000 tons, and 71.77 per cent. of the entire product. Seven years ago there was only 7.74 per cent. of this class of mines and delivering but 57.90 per cent. of the product. The ratio of decrease in the number and product of the class producing less than 50,000 tons has been in like proportion.

There is another division of the mines of the State, designated as shipping mines and mines doing a local business; this classification presents the rank and commercial importance of the mines from which the greater proportion of the product is transported to market, as shown in the following table:

DISTRICT.	SHIPPING MINES.						
	Number.	Total out-put all grades—tons.	Total lump coal—tons.	Per cent. of whole num-ber of mines.	Per cent of total pro-duct.	Average No. of tons of lump coal per mine.	Average No. of days worked.
First	38	3,300,663	2,824,219	53.5	97.2	74,322	219
Second.....	27	1,776,853	1,485,098	12.1	88.8	55,003	223
Third.....	84	3,163,629	2,626,495	35.6	93.1	31,268	208
Fourth.....	59	5,722,159	4,445,713	56.7	98.9	75,351	242
Fifth.....	102	5,294,378	4,049,037	66.7	98.6	39,696	237
The State.....	310	19,257,682	15,430,562	39.3	96.5	49,776	225

The prominent feature brought out in this table is that 310 shipping mines, or 39.3 per cent of the whole number, employ 91.8 per cent. of the men and produce and handle 96.5 per cent. of the total tonnage of the State, and show an average of a fraction less than 50,000 tons each. A similar table follows, of the local mines, which shows relatively the unimportance of this class of mines when compared with the former. Here it is found that 478 mines produce on an average only 1,427 tons each; while their aggregate product is only 3.5 per cent. of the total output of the State:

DISTRICTS,	LOCAL MINES.						
	Number.	Total output all grades—tons.	Total lump coal—tons.	Per cent. of whole number of mines.	Per cent. of total product.	Average No. of tons of lump coal per mine.	Average No. of days worked.
First	33	94,023	88,925	46.5	2.8	2,695	186
Second	197	223,811	223,811	87.9	11.2	1,136	156
Third	152	233,804	233,804	64.4	6.9	1,538	156
Fourth	45	62,707	62,669	43.3	1.1	1,393	173
Fifth	51	77,537	73,128	33.3	1.4	1,434	171
The State	478	691,882	682,337	60.7	3.5	1,427	161

In order to show that the foregoing proportions are not remarkable, the following similar statement is presented for the past four years:

YEARS.	SHIPPING MINES.				LOCAL MINES.			
	Number of mines.	Per cent of whole number of mines.	Per cent of total product —tons.	Average number of lump tons per mine.	Number.	Per cent of whole number of mines.	Per cent of total product —tons.	Average number of lump tons per mine.
1890	327	31.9	93.6	34,176	609	65.1	6.4	1,328
1891	327	35.6	95.5	37,850	591	64.4	4.5	987
1892	309	36.8	95.1	45,356	530	63.2	4.9	1,295
1893	310	39.3	96.5	49,776	478	60.7	3.5	1,427

The prominent feature here is the steady gain of the number and volume of the commercial compared with the local mines. The capacity and expansion of what may be termed the largest mines in the State is shown in the following list of fourteen mines, each of which has put upon the market during the year 200,000 tons and over:

Mines having a total output of over 200,000 tons—all grades.

NAME OF COMPANY.	Location.	County.	District.	Total output of tons of all grades.	Per cent. of lump coal.	Per cent. of other grades of coal.
Consolidated Coal Co., No. 8.....	Mt. Olive	Macoupin	4	304,989	71.59	23.41
Consolidated Coal Co., No. 6.....	Staunton	Macoupin	4	302,449	72.56	27.44
Consolidated Coal Co., No. 10.....	Mt. Olive	Macoupin	4	290,509	72.35	27.65
Chicago, Wilmington & Vermilion Coal Co., No. 3.....	Streator	Livingston....	1	230,090	75	25
Star Coal Co., No. 2.....	Kangley	LaSalle	1	276,129	79.37	20.63
Spring Valley Coal Co., No. 1	Spring Valley	Bureau	2	260,811	85.35	14.65
Pana Coal Co	Pana.....	Christian.....	4	246,118	81.26	18.74
Kelleyville Coal Co., No. 2	Westville	Vermilion	3	244,448	90	10
Mt. Olive Coal Co.....	Mt. Olive	Macoupin	4	227,973	76	24
Penwell Coal Co.....	Pana	Christian	4	222,439	55	45
Spring Valley Coal Co., No. 3.....	Spring Valley	Bureau	2	220,167	71	29
Consolidated Coal Co., No. 7.....	Staunton	Macoupin	4	215,816	66.12	33.88
St. Louis Ore & Steel Co.....	Murphy-boro	Jackson.....	5	209,890	70.6	29.4
DuQuoin Coal Co.....	DuQuoin	Perry.....	5	200,000	70	30
Totals	9 towns—8 counties—14 mines ..			3,501,778	74.84	25.16

There were only 10 mines in this class last year, and 6 the year before, and only four in 1890. All of the districts are here represented for the first time; last year the Fifth district was out, and the year before the Second and Third were not in the list. Seven of the mines reported in the class last year retain their place, and 7 others are added for the 3 dropped out.

Ten companies represent these mines this year; last year there were 6, and the year before 5, and only 3 in 1890. The southern field reports 9 in the list, 7 in the Fourth district, 5 being in Macoupin county. The average of the 14 mines is over 250,000 tons each; this is greater than for any previous year.)

Supplementary to the foregoing the following list of mines is presented, each of which has produced from 100,000 to 200,000 tons:

Mines which have produced 100,000 and less than 200,000 tons.

NAME OF COMPANY.	Location.	County.	Districts.	Total output of tons of all grades.	Per cent. of lump coal.	Per cent. of other grades.
Coal Valley Coal Co.....	Cable.....	Mercer.....	2	198,833	73.51	26.49
Muddy Valley Mining and Man'g Co..	Muddy Valley	Jackson.....	5	196,285	58.35	41.65
Taylorville Coal Co.....	Taylorville.....	Christian.....	4	195,263	81.18	18.82
Girard Coal Co.....	Girard.....	Macoupin.....	4	189,591	92.98	7.02
Consolidated Coal Co., Abbey.....	Collinsville.....	Madison.....	4	184,729	77.49	22.51
Consolidated Coal Co., Heintz Bluff..	Collinsville.....	Madison.....	4	184,077	75.61	24.39
Madison Coal Co., No. 2.....	Glen Carbon..	Madison.....	4	184,032	75.63	24.37
Spring Valley Coal Co., No. 2.....	Spring Valley	Bureau.....	2	173,709	86.29	13.71
Wilmington Mining and M'g Co., No. 4	Diamond.....	Grundy.....	1	168,338	99.05	.95
Star Coal Co.....	Carbon Hill.....	Grundy.....	1	166,642	88.81	11.19
St. Louis and Big Muddy Coal Co.....	Cartersville.....	Williamson.....	5	165,803	48.70	51.30
Illinois Valley Coal Co.....	Oglesby.....	LaSalle.....	1	161,984	84.73	15.27
St. Louis Ore and Steel Co., No. 5.....	Murphysboro	Jackson.....	5	154,713	74.48	25.52
McLean Co. Coal Co.....	Bloomington..	McLean.....	3	154,627	75.42	24.58
Consolidated Coal Co.....	Danville.....	Vermilion.....	3	150,832	82.39	17.61
Union Coal Co., No. 1.....	Peru.....	LaSalle.....	1	149,228	82.10	17.90
Whitebreast Fuel Co., B.....	Ladd.....	Bureau.....	2	147,771	85.10	14.90
Chicago, Milwaukee & St. Paul Coal Co.	Braceville.....	Grundy.....	1	146,590	95.91	4.09
Consolidated Coal Co., Mentor.....	Ridge Prairie..	St. Clair.....	5	146,330	84.73	15.27
LaSalle Co. Carbon Coal Co.....	LaSalle.....	LaSalle.....	1	141,784	81.75	18.25
Chicago, Wilmington & Ver. Coal Co., O.	Braidwood.....	Grundy.....	1	138,736	96.15	3.85
Consolidated Coal Co., Abbey 4.....	Collinsville.....	St. Clair.....	5	136,376	66.88	33.12
Sandoval Coal and Mining Co.....	Sandoval.....	Marion.....	5	130,855	81.28	18.72
Whitebreast Fuel Co.....	Dunfermline..	Fulton.....	3	126,991	75.53	24.47
Cartersville Coal Co.....	Cartersville.....	Williamson.....	5	125,760	51.68	48.32
Springside Coal Co.....	Pana.....	Christian.....	4	125,519	57.36	42.64
Centralia Mining and Manufact'g Co.	Centralia.....	Marion.....	5	124,500	73.41	26.59
Star Coal Co., No. 1.....	Carbon Hill.....	Grundy.....	1	123,796	88.75	11.25
Chi., Wilmington & Ver. Coal Co., No. 2.	Sreator.....	LaSalle.....	1	122,438	75.00	25.00
Consolidated Coal Co., Gillespie.....	Gillespie.....	Macoupin.....	4	121,639	76.60	23.40
Empire Coal Co.....	Gilchrist.....	Mercer.....	2	121,291	74.67	25.33
Chicago, Wilmington & Ver. Coal Co.	Seatonville.....	Bureau.....	2	117,593	88.50	11.50
Riverton Coal and Mining Co.....	Riverton.....	Sangamon.....	4	116,392	73.52	26.48
Hillsboro Coal Co.....	Hillsboro.....	Montgomery..	4	115,792	63.13	36.87
Decatur Coal Co., No. 1.....	Decatur.....	Macon.....	4	115,000	87.00	13.00
Illinois Fuel Co.....	Spaulding.....	Sangamon.....	4	112,234	89.30	10.70
Crystal Plate Glass Co.....	Fredonia.....	Williamson.....	5	111,156	85.41	14.59
Chicago, Wilmington & Ver. Coal Co.	Braidwood.....	Grundy.....	1	110,182	96.15	3.85
Chicago and Minonk Coal Co.....	Minonk.....	Woodford.....	3	109,948	88.90	11.10
Consolidated Coal Co., Alma.....	Ridge Prairie..	St. Clair.....	5	109,396	87.81	12.19
Pawnee Coal Co.....	Westville.....	Vermilion.....	3	107,945	89.35	10.65
Sangamon Coal Co.....	Springfield..	Sangamon.....	4	104,566	78.74	21.26
Woodside Coal Co.....	Iles Junction..	Sangamon.....	4	102,100	78.35	21.65
Jupiter Mining Co.....	DuQuoin.....	Perry.....	5	100,599	60.00	40.00
Excelsior Coal and Mining Co.....	DuQuoin.....	Perry.....	5	100,000	74.00	26.00
Totals .....	.....	.....	..	6,291,965	79.52	20.48

This list embraces 45 mines; last year the corresponding list contained 42, and the year before 37. These collieries, with the preceding list of 14, may be regarded as the representative mines of the State, and may be classed as such without any question as to the possible capability of many others. Combined, the two lists make a total of 59 coal mines which have yielded 100,000 tons each, and over, with the aggregate result of 9,793,743 tons, or nearly one-half of the entire product of the State.

Reviewed by ownership it is found that 39 companies are the proprietors; one company is represented by 11 mines, another

by 5, two others by 3 each, and two others by 2 each; the others follow with one plant each. The six companies operating more than one mine report nearly 50 per cent. of the tonnage produced by the 59 mines.

These large establishments are quite generally dispersed throughout the coal-field of the State, and are increasing from year to year, as will be seen in the following recapitulation for three years by districts:

Mines having a total output of 100,000 tons and over.

DISTRICTS.	THE YEAR 1893.		THE YEAR 1892.		THE YEAR 1891.	
	No. Mines.	Total tons.	No. Mines.	Total tons.	No. Mines.	Total tons.
First	12	1,985,937	15	2,305,796	12	1,899,008
Second	7	1,240,175	6	1,015,949	5	742,365
Third	6	894,791	4	690,634	5	673,553
Fourth	20	3,661,177	17	2,993,734	13	2,329,251
Fifth	14	2,011,663	10	1,322,579	8	1,096,662
The State	59	9,793,743	52	8,328,692	43	6,650,839

It will be observed that the increase of these large establishments, as to number and tonnage, has been mainly in the southern portion of the State.)

THE OUTPUT FOR THE YEAR.

(This year the total product of the mines of the State has been 19,949,564 tons, of this aggregation 16,112,899 tons are reported as lump coal, and 3,836,665 tons as other grades; of the latter 576,965 tons are given as nut coal. However, it is understood that a large portion of all grades of sizes of coal is put upon the market, so that it may be claimed that the entire product should be classed as merchantable coal. In order to continue parallel comparisons with former years, the following table of lump tons is presented by districts for five years:

Total tonnage of lump coal, with gains and losses, for five years—by districts.

DISTRICTS.	OUTPUT OF LUMP COAL BY DISTRICTS.					GAINS AND LOSSES.			
	1889— Tons.	1890— Tons.	1891— Tons.	1892— Tons.	1893— Tons.	1891-1892.		1892-1893.	
						Gain.	Loss	Gain.	Loss
First.....	2,530,453	2,303,326	3,701,652	2,965,067	2,913,144	263,415	.....	.....	51,923
Second.....	1,087,848	1,002,600	1,215,883	1,461,224	1,708,909	225,341	.....	247,685	.....
Third.....	2,050,349	2,375,970	2,336,500	2,711,574	2,860,299	375,074	.....	148,725	.....
Fourth.....	3,164,835	3,716,464	3,532,233	4,090,921	4,508,382	558,688	.....	417,461	.....
Fifth.....	2,764,478	3,240,004	3,173,956	3,502,177	4,122,165	328,221	.....	619,988	.....
The State.....	11,597,963	12,638,364	12,960,224	14,730,963	16,112,899	1,750,739	.....	1,433,859	51,923
Net gain....	.....	1,040,401	321,860	1,770,739	1,381,936	1,750,739	.....	1,381,936	.....

It will be noticed that four of the districts show gains over last year, and that one, the First, a loss; this latter is perhaps attributable alone to the excessive flooding, reported by the inspector, in several of the mines in the district, not an unusual barrier with which to contend in this field. The net gain this year in the State over 1892 is somewhat less than the gain of last year over 1891; however, the total gain in four years is made to aggregate over four and a half million tons. To show the gains and losses by percentages the following table is given for five years:

Percentages of increase and decrease in tonnage of lump coal, for five years—by districts.

DISTRICTS.	YEAR 1889.		YEAR 1890.		YEAR 1891.		YEAR 1892.		YEAR 1893.		FIVE YEARS.	
	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.
First.....	.....	13.73	.....	9.86	17.29	.....	9.75	.....	1.78	.....	1.23	.....
Second.....	.....	18.14	.....	8.5	21.27	.....	18.53	.....	16.95	.....	32.15	.....
Third.....	.....	6.91	15.88	.....	1.26	16.05	.....	5.48	.....	.....	30.57	.....
Fourth.....	10.88	.....	17.43	.....	5.22	15.82	.....	10.2	.....	.....	57.94	.....
Fifth.....	4.81	.....	17.2	.....	2.08	10.34	.....	17.7	.....	.....	56.28	.....
The State.....	.....	2.22	8.97	.....	2.55	.....	13.51	.....	9.38	.....	35.93	.....

The increase of the output of lump coal in the State for the years since 1888 is shown to be 35.93 per cent.; last year the increase for four years was 24.26 per cent. The First district, after a successive increase for the past two years, shows a small per cent. of loss; this decline was caused by water in several

mines so that working had to be abandoned. In the other districts gains have been made; the Fifth district shows the largest per cent. of increase, and greater than in any of the previous years, bringing the gain in this district in the five years to 56.28 per cent.; the Second district shows the next highest per cent. of gain, which, with the notable gain of the two previous years, makes the gain for the five years 32.15 per cent., while the Fourth district follows with a gain for the year of 10.2 per cent., making the increase in this district for the five years 57.94 per cent.; the smallest per cent of gain was in the Third district. The increase in the State over last year was 9.38 per cent. It should be noticed that the preceding statements are based on tons of lump coal, and while all large contracts for the product of the more extensive establishments of the State are perhaps based on tons of lump coal, yet the remarkable increase in the tonnage of screened coal would seem to indicate that there is comparatively a very small percentage of the total output left to be classed as unsalable.

(This is the third year that the inspectors have secured and reported the total tonnage, including all grades of sizes of coal. The following table presents the total product by districts with the percentages of lump and other grades derived from the returns:

DISTRICTS.	Total product 1891, Tons.	PERCENT- AGE OF—		Total product 1892, Tons.	PERCENT- AGE OF—		Total product, 1893, tons.	PERCENT- AGE OF—	
		Lump grades.	Other grades.		Lump grades.	Other grades.		Lump grades.	Other grades.
First	3,082,915	87.63	12.37	3,458,066	85.74	14.26	3,394,686	85.81	14.19
Second	1,440,266	82.73	17.27	1,733,608	84.29	15.71	2,000,664	85.42	14.58
Third	2,794,004	83.54	16.46	3,260,951	83.15	16.85	3,397,433	84.19	15.81
Fourth.....	4,428,109	79.61	20.40	5,117,600	79.94	20.06	5,784,866	77.93	22.07
Fifth	3,915,404	81.06	18.94	4,292,051	81.60	18.40	5,371,915	76.73	23.27
The State.....	15,660,698	82.76	17.24	17,862,276	82.47	17.53	19,949,564	80.77	19.23

From this it will be seen that the proportion of lump coal, as reported during the year, has slightly declined; this, however, should not be considered to imply that the per cent. of other grades of coal has increased; for the reason that the tons reported as other grades are not determined by weighing, but are estimated without thought of being taken as the accurate tonnage.

The proportion of other grades as reported is shown in the table to be 19.23 per cent. of the total product of coal of the State; however, deducting the 576,965 tons reported and included in other grades, which are reported elsewhere as being nut and other sizes less than lump, gives 16.34 per cent. as the proportion of the smaller grades; for the two preceding years it was substantially 17 per cent. In the First, Second and Third districts the percentages have decreased, while in the Fourth and Fifth districts they have increased. Taking some of the large individual mines in the two latter districts it is found that they report other grades as ranging from 25 to 50 per cent., when in fact a very small per cent. of the total product should be excluded from the lump tonnage. This proportion applied to the total product of the State for this and previous years is presented in the following table with the total number of mines and men employed:

Total number of mines, men and product, lump and other grades, for 12 years.

YEARS.	Whole No. of mines.	Whole No. of men employed.	Total product in tons, 2,000 pounds.	Total tons of lump coal.	Total tons of other grades.
1882	704	20,290	11,017,069	9,115,653	1,901,506
1883	639	23,939	12,123,456	10,030,991	2,092,465
1884	741	25,575	12,208,075	10,101,005	2,107,070
1885	778	25,946	11,834,459	9,791,874	2,402,585
1886	787	25,846	11,175,241	9,246,435	1,928,806
1887	801	26,804	12,423,066	10,278,890	2,144,176
1888	822	29,410	14,328,181	11,855,188	2,472,993
1889	854	30,076	14,017,298	11,597,963	2,419,335
1890	936	28,574	15,274,727	12,638,364	2,636,363
1891	918	32,951	15,660,638	12,960,224	2,700,414
1892	859	33,632	17,062,276	14,750,963	3,131,313
1893	788	35,390	19,949,564	16,112,899	3,836,665

There are 21 counties this year distinguishable for their importance as yielding the greater proportion of coal of the State; each has contributed over 200,000 tons; the combined product being 18,151,117 tons, or 91 per cent. of the total, leaving 9 per cent. distributed in the other 35 coal producing counties. Last year 20 counties were in the list, the year before 21. The following table gives these counties for three years arranged as to output, with the number of the district in which situated:

Counties which have produced more than 200,000 tons of coal, arranged in order of their rank for years 1891, 1892 and 1893.

DISTRICTS.	YEAR 1891.			DISTRICTS.	YEAR 1892.			DISTRICTS.	YEAR 1893.		
	COUNTIES.	Rank.	Total product, tons.		COUNTIES.	Rank.	Total product, tons.		COUNTIES.	Rank.	Total product, tons.
5	St. Clair.....	1	1,595,839	4	Macoupin.....	1	1,823,136	5	St. Clair.....	1	2,133,870
4	Macoupin.....	2	1,461,344	5	St. Clair.....	2	1,759,822	4	Macoupin.....	2	1,988,069
1	LaSalle.....	3	1,378,168	1	LaSalle.....	3	1,544,311	1	LaSalle.....	3	1,494,826
4	Sangamon.....	4	1,051,604	1	Grundy.....	4	1,175,084	4	Sangamon.....	4	1,410,346
1	Grundy.....	5	921,907	4	Sangamon.....	5	1,091,014	1	Grundy.....	5	1,186,919
3	Vermilion.....	6	880,466	3	Vermilion.....	6	972,589	2	Bureau.....	6	1,143,270
4	Madison.....	7	719,308	2	Bureau.....	7	943,446	3	Vermilion.....	7	996,768
4	Christian.....	8	718,326	4	Madison.....	8	873,770	4	Madison.....	8	951,894
2	Bureau.....	9	701,064	5	Jackson.....	9	869,514	5	Jackson.....	9	926,242
5	Jackson.....	10	681,859	4	Christian.....	10	767,354	5	Perry.....	10	860,151
5	Perry.....	11	604,152	3	Fulton.....	11	666,473	4	Christian.....	11	839,650
3	Peoria.....	12	564,119	3	Peoria.....	12	632,939	3	Fulton.....	12	772,497
3	Fulton.....	13	484,117	1	Livingston.....	13	532,667	3	Peoria.....	13	620,149
1	Livingston.....	14	458,329	5	Perry.....	14	461,068	1	Livingston.....	14	542,516
5	Marion.....	15	421,652	5	Marion.....	15	376,519	5	Marion.....	15	480,529
2	Mercer.....	16	314,360	2	Mercer.....	16	328,542	5	Williamson.....	16	418,426
1	Will.....	17	233,603	5	Williamson.....	17	322,486	2	Mercer.....	17	363,206
3	McLean.....	18	230,129	3	Menard.....	18	285,695	3	Menard.....	18	281,635
4	Macon.....	19	207,286	4	Macon.....	19	227,020	4	Macon.....	19	280,233
5	Williamson.....	20	206,452	3	McLean.....	20	222,372	5	Clinton.....	20	255,095
3	Menard.....	21	204,583					3	McLean.....	21	204,827
	Totals.....		13,938,667		Totals.....		15,875,871		Totals.....		18,151,117

St. Clair county heads the list this year with 2,133,870 tons; this is the first time in the history of coal production in the State, that a single county has attained a record of two million tons; Macoupin county follows with nearly two million tons; both counties have increased more than a half million tons over their output of 1891. LaSalle county maintains its position of third in rank, which it has held for the past five years, and has, with the exception of one year, 1886, a continuous record for twelve years of over one million tons output. Sangamon county again takes fourth place, where it has been for three years in succession, previous to last year, when it surrendered to Grundy county, which ranks as fifth. Bureau county advances to sixth in rank, and records for the first time over a million tons. Will county is out of the list this year and was also out last year. Clinton county takes a place in this list for the first time, with an output of over a quarter of a million of tons.

The following table presents the total product of all the coal producing counties for the past three years with the tons of lump coal and other grades for the last two years:

Output by Counties and Districts for the years 1892 and 1893.

DISTRICTS AND COUNTIES.	FOR YEAR 1892.			FOR YEAR 1893.		
	Total out- put lump, tons.	Total out- put other grades.	Total out- put all grades.	Total out- put lump, tons.	Total out- put other grades.	Total out- put all grades.
First District.....	2,965,067	492,999	3,458,066	2,913,144	481,542	3,394,686
Grundy.....	1,108,419	66,665	1,175,084	1,106,574	80,345	1,186,919
Kankakee.....	81,793	10,365	92,158	83,700	5,000	88,700
La Salle.....	1,261,467	282,484	1,544,311	1,242,566	252,260	1,494,826
Livingston.....	404,491	128,176	532,667	402,370	140,146	542,516
Will.....	108,897	4,949	113,846	77,934	3,791	81,725
Second District.....	1,461,224	272,384	1,733,608	1,708,909	291,755	2,000,664
Bureau.....	809,009	134,487	943,496	976,572	166,698	1,143,270
Hancock.....	5,380	.....	5,380	5,060	.....	5,060
Henry.....	142,762	13,974	156,736	148,324	7,937	156,261
Knox.....	43,137	.....	43,137	49,808	.....	49,808
Marshall.....	64,276	14,300	78,576	78,700	13,444	92,144
McDonough.....	82,001	9,126	91,127	92,096	10,830	102,926
Mercer.....	23,244	95,298	328,542	273,390	89,816	363,206
Rock Island.....	34,017	2,092	36,109	34,058	250	34,308
Schuyler.....	13,685	3,107	16,792	15,955	2,780	18,735
Stark.....	22,349	.....	22,349	23,070	.....	23,070
Warren.....	11,364	.....	11,364	11,876	.....	11,876
Third District.....	2,711,574	549,377	3,260,951	2,860,299	537,134	3,397,433
Cass.....	13,270	2,060	15,330	21,370	1,780	23,150
Fulton.....	535,288	131,185	666,473	610,854	161,643	772,497
Logan.....	163,002	24,354	187,356	157,699	31,620	189,319
McLean.....	170,912	51,460	222,372	153,027	51,800	204,827
Menard.....	237,419	48,276	285,695	230,296	51,339	281,635
Peoria.....	541,659	91,280	632,939	537,928	82,221	620,149
Tazewell.....	94,190	25,966	120,156	113,597	15,360	128,957
Vermilion.....	827,893	144,696	972,589	873,597	123,171	996,768
Woodford.....	127,941	30,100	158,041	161,931	18,200	180,131
Fourth District.....	4,090,921	1,026,679	5,117,600	4,508,382	1,276,684	5,784,866
Bond.....	92,308	29,504	121,812	56,120	22,480	78,600
Calhoun.....	4,637	.....	4,637	4,584	.....	4,584
Christian.....	525,746	241,608	767,354	593,602	246,048	839,650
Greene.....	19,870	.....	19,870	10,995	.....	10,995
Jersey.....	3,378	.....	3,378	5,904	.....	5,904
Macon.....	198,375	28,645	227,020	237,442	42,791	280,233
Macoupin.....	1,431,021	389,115	1,823,136	1,509,594	478,475	1,988,069
Madison.....	703,980	169,790	873,770	758,283	193,603	951,894
Montgomery.....	119,850	28,020	147,870	123,920	51,792	175,712
Morgan.....	4,266	.....	4,266	2,142	.....	2,142
Sangamon.....	951,517	139,497	1,091,014	1,170,854	239,492	1,410,346
Scott.....	17,006	500	17,506	22,157	600	22,757
Shelby.....	15,665	.....	15,665	12,260	1,200	13,460
Cumberland, Effing- ham, Jasper, Rich- land and Pike.....	302	.....	302	520	.....	520

Output by Counties and Districts, 1892 and 1893—Concluded.

DISTRICTS AND COUNTIES.	FOR YEAR 1892.			FOR YEAR 1893.		
	Total out-put lump, tons.	Total out-put other grades.	Total out-put all grades.	Total out-put lump, tons.	Total out-put other grades.	Total out-put all grades.
Fifth District.....	3,502,177	789,874	4,292,051	4,122,165	1,249,750	5,371,915
Clinton.....	156,876	35,497	191,873	174,994	80,101	255,095
Franklin.....	200	.....	200	120	.....	120
Gallatin.....	13,782	720	14,502	14,972	2,485	17,457
Hamilton.....	200	.....	200	244	.....	244
Hardin.....	.....	.....	.....	.....	.....	.....
Jackson.....	674,186	195,353	869,514	674,943	251,299	926,242
Jefferson.....	100	.....	100	90	.....	90
Johnson.....	2,200	.....	2,200	.....	.....	.....
Marion.....	306,019	70,500	376,519	352,793	127,736	.....
Perry.....	362,926	98,142	461,068	620,502	239,649	860,151
Randolph.....	160,532	8,447	168,979	161,565	9,490	170,055
Saline.....	41,992	19,610	61,602	24,929	11,507	34,436
St. Clair.....	1,519,472	240,350	1,759,822	1,778,787	355,083	2,133,870
Washington.....	54,183	8,783	62,966	63,500	8,700	72,200
Williamson.....	210,014	112,472	322,486	254,726	163,700	418,426
State totals.....	14,730,963	3,131,313	17,862,276	16,112,899	3,836,665	19,949,564

A succeeding table is presented giving the totals of mines, employés and products by districts, for the past eleven years:

Number of mines, men, and tons raised, in each district and the State, for each of the eleven years, on the basis of all grades of product.

YEARS.	FIRST DISTRICT.			SECOND DISTRICT.			THIRD DISTRICT.		
	No. of mines	No. of employes.	No. of tons of coal.	No. of mines	No. of employes.	No. of tons of coal.	No. of mines	No. of employes.	No. of tons of coal.
1883.....	93	7,566	3,015,544	229	3,211	1,004,977	92	4,070	2,036,662
1884.....	84	8,013	3,030,407	264	3,616	890,273	171	5,018	2,336,080
1885.....	74	7,463	3,044,943	236	3,391	873,911	209	5,213	2,189,264
1886.....	69	7,613	2,812,100	262	3,599	851,728	223	4,870	1,835,193
1887.....	68	7,915	3,217,302	275	4,068	1,292,026	236	4,903	2,152,994
1888.....	70	8,623	3,478,106	267	4,914	1,562,946	237	5,250	2,649,397
1889.....	72	9,018	3,058,305	264	4,498	1,314,773	246	5,117	2,478,052
1890.....	79	8,258	2,783,700	254	4,099	1,211,742	273	5,171	2,871,597
1891.....	70	9,128	3,082,915	261	5,089	1,440,266	273	6,458	2,794,004
1892.....	70	9,572	3,458,066	240	4,865	1,733,608	256	6,453	3,260,951
1893.....	71	8,831	3,394,686	224	5,794	2,000,604	231	6,964	3,897,433

Number of mines, men, and tons raised, in each district and the State for eleven years—Concluded.

YEARS.	FOURTH DISTRICT.			FIFTH DISTRICT.			THE STATE.		
	No. of mines	No. of em- ployes.	No. of tons of coal.	No. of mines	No. of em- ployes.	No. of tons of coal.	No. of mines	No. of em- ployes.	No. of tons of coal.
1883.....	95	4,417	3,660,086	130	4,695	2,406,227	639	23,939	12,123,456
1884.....	104	3,781	3,389,136	118	4,147	2,572,262	741	25,575	12,208,075
1885.....	104	4,950	3,161,898	126	4,429	2,564,653	778	25,946	11,834,459
1886.....	109	5,197	3,323,421	126	4,567	2,352,794	787	25,846	11,175,241
1887.....	111	4,934	3,104,520	118	4,984	2,626,708	801	26,804	12,423,066
1888.....	108	5,086	3,449,997	151	5,537	3,187,738	822	29,410	14,528,181
1889.....	98	5,679	2,825,020	174	5,764	3,341,148	854	30,076	14,017,298
1890.....	137	5,685	4,491,718	193	5,361	3,915,869	936	28,574	15,274,727
1891.....	126	5,881	4,428,109	185	6,395	3,915,404	918	32,951	15,660,698
1892.....	109	6,542	5,117,600	164	6,200	4,292,051	839	33,632	17,862,276
1893.....	104	7,021	5,784,866	153	6,780	5,371,915	788	35,390	19,949,564

The gains and losses in the tonnage of lump coal is stated in the following table, and closes the consideration of the output:

Gains and losses by Districts and years in lump coal, for each of eleven years.

YEARS.	FIRST DISTRICT.		SECOND DISTRICT.		THIRD DISTRICT.		FOURTH DISTRICT.		FIFTH DISTRICT.		THE STATE.	
	Increase, tons.	Decrease, tons.	Increase, tons.	Decrease, tons.	Increase, tons.	Decrease, tons.	Increase, tons.	Decrease tons.	Increase, tons.	Decrease, tons.	Increase, tons.	Decrease, tons.
1883.....	45,460	120,996	.....	335,088	.....	953,124	.....	448,410	915,338	.....	.....	.....
1884.....	12,298	.....	103,181	217,773	.....	224,188	137,308	.....	70,013	.....	.....	.....
1885.....	12,027	.....	5,264	.....	121,476	.....	188,191	6,227	.....	309,131	.....	.....
1886.....	192,655	.....	18,354	.....	292,960	.....	133,821	175,291	.....	545,439	.....	.....
1887.....	360,087	364,304	.....	262,950	.....	181,522	226,636	.....	1,032,455	.....	.....	.....
1888.....	190,965	224,160	.....	410,726	.....	286,249	464,198	.....	1,576,298	.....	.....	.....
1889.....	347,841	.....	205,339	.....	141,772	.....	310,295	126,932	.....	256,595	.....	.....
1890.....	227,127	.....	85,248	325,621	.....	551,629	.....	475,526	1,040,401	.....	.....	.....
1891.....	398,326	213,283	.....	.....	39,470	.....	184,231	66,048	821,860	.....	.....	.....
1892.....	263,415	245,341	.....	375,074	.....	558,688	.....	328,221	1,770,739	.....	.....	.....
1893.....	51,923	247,685	.....	149,377	.....	417,461	.....	619,988	1,371,936	.....	.....	.....
Inc.....	372,612	.....	998,383	.....	1,510,931	.....	2,433,138	.....	1,682,833	.....	6,987,875	.....

THE NUMBER OF ACRES WORKED OUT.

The total number of acres from which coal has been extracted during the year is reported as 3,109. This is a little over 100 acres more than reported last year. The calculations for obtaining this information are based mainly on the thickness of the seam and quantity of coaltaken out. The following table, by counties and districts for three years, presents the results as obtained by the inspectors, based on estimates made at each mine dependent on the best information obtainable as to existing conditions:

Number of mines, men, total tons of coal produced and number of acres worked out for the years 1891, 1892 and 1893.

DISTRICTS AND COUNTIES.	FOR THE YEAR 1891.		FOR THE YEAR 1892.				FOR THE YEAR 1893.			
	Total number of tons of coal produced.	Estimated number of acres worked out.	Number of mines.	Number of men employed.	Total number of tons of coal produced.	Estimated number of acres worked out.	Number of mines.	Number of men employed.	Total number of tons of coal produced.	Estimated number of acres worked out.
THE State.....	15,660,211	2,802.41	1833	33,632	17,861,974	3,004.39	1779	35,374	19,949,044	3,109.07
FIRST DISTRICT.....	3,082,925	669.98	70	9,572	3,458,066	737.72	71	8,831	3,894,686	676.87
Grundy.....	921,907	230.15	23	3,782	1,175,084	299	24	3,644	1,186,919	252.21
Kankakee.....	90,908	21.1	2	302	92,158	23.20	2	284	88,700	23.9
LaSalle.....	1,378,168	269.05	28	3,792	1,541,311	288.20	28	3,409	1,494,826	278.4
Livingston.....	458,329	89.68	14	1,325	532,667	98.30	14	1,207	542,616	99.8
Will.....	233,603	60	3	371	113,846	29.02	3	287	81,725	21.56
SECOND DISTRICT..	1,440,266	348.7	240	4,865	1,733,608	394.4	224	5,794	2,000,664	470.1
Bureau.....	701,064	145.2	17	2,173	943,496	190	18	2,990	1,143,270	244.5
Hancock.....	6,740	3.1	6	39	5,889	2.80	4	31	5,060	1.9
Henry.....	131,986	32.4	28	484	156,736	44.90	28	544	156,261	50.4
Knox.....	41,974	15.9	42	358	43,137	13.60	39	245	49,808	17
Marshall.....	65,219	22.4	11	244	78,576	23.5	12	277	92,144	27.8
McDonough.....	31,732	28.8	44	569	91,127	34.2	35	550	102,926	37.1
Mercer.....	314,360	71.8	18	656	328,542	57.8	19	710	363,206	64.7
Rock Island.....	41,540	11.6	22	192	36,109	10.4	18	153	34,308	19.1
Schuyler.....	20,120	3.3	5	61	16,792	3.1	7	80	18,735	4
Stark.....	20,157	6.9	26	111	22,349	6.5	24	130	23,070	6.7
Warren.....	12,372	7.3	21	78	11,364	5.6	22	81	11,876	5.9
THIRD DISTRICT....	2,794,004	513.47	256	6,453	3,260,951	578.86	236	6,964	3,397,433	640.92
Cass.....	6,466	2.4	4	41	15,330	4.11	3	56	23,150	5.58
Fulton.....	484,117	95.65	80	1,415	666,473	122.42	72	1,577	772,497	159.09
Logan.....	176,052	31.2	3	287	187,356	30.70	3	298	189,319	37.3
McLean.....	230,129	41.3	3	435	222,372	43.14	3	436	204,827	39.5
Menard.....	204,583	29.69	10	392	285,395	42.91	9	542	281,635	46.87
Peoria.....	564,119	117.86	75	1,279	632,939	126.74	72	1,374	620,149	138.43
Tazewell.....	110,252	22.9	11	246	120,156	23.81	10	299	128,957	25.29
Vermilion.....	880,466	131.27	68	.....	972,589	143.43	62	1,939	996,768	144.66
Woodford.....	140,820	32.9	2	.....	158,041	42.50	2	443	180,131	43.2
FOURTH DISTRICT..	4,427,622	695.17	1103	6,542	5,117,298	750.76	195	7,005	5,784,346	797.50
Bond.....	102,535	15.66	2	165	121,812	21	1	104	78,600	11.13
Calhoun.....	2,773	.75	1	20	4,637	1.4	1	16	4,584	1.50
Christian.....	719,326	104.98	6	1,011	767,354	94.60	6	1,104	839,650	101.5
Greene.....	14,442	4.83	12	97	19,870	6.81	5	55	10,995	3.05
Jersey.....	4,252	1.44	4	18	3,878	1.2	4	21	5,904	1.6
Macon.....	207,236	43.00	3	408	227,020	32.92	3	456	280,233	10.59
Macoupin.....	1,461,344	225.17	14	1,733	1,823,136	277.65	16	791	1,988,069	298.03
Madison.....	719,308	109.03	22	924	873,770	127.96	22	1,008	951,894	143.44
Montgomery.....	107,190	16.6	3	258	147,870	21	3	276	175,712	20.70
Morgan.....	7,610	1.7	3	18	4,266	1.5	3	14	2,142	1.35
Sangamon.....	1,051,604	161.16	20	1,765	1,091,014	151.6	21	2,027	1,410,346	192.87
Scott.....	14,755	4.2	7	65	17,506	6.77	4	59	22,757	6.93
Shelby.....	14,197	6.65	6	54	15,665	6.35	6	74	13,460	4.81

† Six mines in Effingham, Pike and Richland counties, producing 302 tons of coal in all, not included in this table.

† Nine mines in Cumberland, Effingham, Jasper, Pike and Richland counties, employing 16 men, producing 520 tons of coal in all, not included in this table.

Total number of employ  s in and about the mines by districts and years.

YEARS.	TOTAL NUMBER OF EMPLOY��S BY YEARS AND DISTRICTS.					
	First district.	Second district.	Third district.	Fourth district.	Fifth district.	The State.
1883.....	7,566	3,211	4,070	4,417	4,675	23,939
1884.....	8,013	3,616	5,018	4,781	4,147	25,575
1885.....	7,463	3,391	5,213	4,950	4,429	25,446
1886.....	7,613	3,599	4,870	5,197	4,567	25,846
1887.....	7,915	4,068	4,903	4,934	4,984	26,804
1888.....	8,623	4,914	5,250	5,086	5,537	29,410
1889.....	9,014	4,498	5,117	5,679	5,764	30,076
1890.....	8,258	4,099	5,171	5,685	5,361	28,574
1891.....	9,128	5,089	6,458	5,881	6,395	32,951
1892.....	9,572	4,865	6,453	6,542	6,200	33,632
1893.....	8,831	5,794	6,964	7,021	6,780	35,390
Net increase	1,265	2,583	2,894	2,904	2,105	11,451

DAYS OF ACTIVE OPERATIONS.

The coal mine, as well as the manufacturing establishment, to be successfully operated, both for the employer and the employed, must depend largely on being worked uninterruptedly. The mining industry has, perhaps, more reverse conditions to contend with, affecting the working time, than any other of like magnitude. The causes interposing may come from numerous sources, the breaking or accidents to machinery, both on the surface and under ground, insufficient transportation, the condition of the weather, which has a controlling power on the market, wage controversies, fires and floods, all go to retard continuous operation.

(The number of days of running time of all mines for all the years has been furnished by the operators, hence may be considered the maximum working time of the employ  s during each year. Last year and the year before the basis of calculation for the number of days of operation was made on the record of the shipping mines, also with all mines which had produced 1,000 tons or more of lump coal and running 100 days or more; the same basis governs in the present calculation, and gives this year for 301 shipping mines an average of 229.6 days, and for 496 mines of both classes an average of 225.5 days.)

The following table for the past three years gives by districts the results obtained from computations for both classes:

DISTRICTS	SHIPPING MINES.						ALL MINES PRODUCING 1,000 TONS OR MORE, AND WORKING 100 DAYS OR MORE.					
	YEAR 1893.		YEAR 1892.		YEAR 1891.		YEAR 1893.		YEAR 1892.		YEAR 1891.	
	No. of mines.	Average number of days.	No. of mines.	Average number of days.	No. of mines.	Average number of days.	No. of mines.	Average number of days.	No. of mines.	Average number of days.	No. of mines.	Average number of days.
First.....	38	220	35	218.3	34	207.6	60	213	59	207.5	53	200.9
Second....	26	228	29	214.8	26	214.6	92	225	91	208	90	215.4
Third.....	80	215	84	203.8	88	193	136	213	144	239.9	148	201
Fourth....	56	251	55	239.9	54	238.8	80	249	81	240	86	233.5
Fifth.....	101	233	96	221.8	106	225	128	223	120	227.7	124	227.8
The State.	301	229.6	299	219.5	308	215.6	496	225.5	495	217.7	501	215.8

The correctness of successive data compiled in each district is shown in the following table of these mines for three years:

YEARS.	SHIPPING MINES.		MINES IN LOCAL TRADE.		BOTH CLASSES OF MINES.	
	No. of mines.	Average No. days.	No. of mines.	Average No. days.	No. of mines.	Average No. days.
1891.....	308	215.6	193	216.1	501	215.8
1892.....	299	219.5	196	215.2	495	217.7
1893.....	301	229.6	195	219.5	496	225.5

It may be claimed, therefore, that this showing fully demonstrates that the collieries designated as shipping mines may be considered the true index as to the days of active operation of the mines of the State; they may also, as well, be regarded as the reflex of the industry as to employes and the product.

For this year the showing is better than for any former year, 301 or 38 per cent. of the mines, giving work to 90.7 per cent. of the number employed, running 229.6 days, produced 95.9 per cent. of the total output of this staple commodity. To further elucidate this statement the following table is presented, giving the number of shipping mines with their percentages of the total product and employes by districts, for three years, and the average days of operation for six years:

DISTRICTS.	FOR THE YEAR 1893.			FOR THE YEAR 1892.			FOR THE YEAR 1891.			AVERAGE NUMBER OF DAYS OF ACTIVE OPERATION.					
	Number of mines.	Per cent. of total pro- duct, lump.	Per cent. of total number employed.	Number of mines.	Per cent. of total pro- duct, lump.	Per cent. of total number employed.	Number of mines.	Per cent. of total pro- duct, lump.	Per cent. of total number employed.	1893.	1892.	1891.	1890.	1889.	1888.
First	38	96.9	95.5	35	95.8	91.6	34	96.7	91.7	220	218.3	207.6	178	188	216
Second.....	26	86.1	78.6	29	86.8	75.9	26	82	74.8	228	214.8	214.9	182	198	219
Third	80	93.3	85.4	84	90.6	85.4	88	89.8	87.8	215	203.8	193.2	193	203	219
Fourth.....	56	98.4	95.5	55	97.8	94.1	54	97.2	83.2	251	239.9	238.8	243	240.3	230
Fifth	102	95.7	95.1	96	98.1	92	106	97.5	94.3	233	221.8	225	232	235	219
The State	301	95.9	90.7	299	95.2	88.8	308	94.4	88.8	229.6	219.5	215.6	203.5	211.5	220.6

AVERAGE VALUE OF COAL.

The importance of the yearly compilation of the average value of the product of the mines of the State, as reported by the owners to the inspectors, and based on merchantable coal, is appreciated equally by the employer and the employed. On the basis of the value of the product must rest the compensation of the workmen, also the capability of the mine owner or operator to maintain the running expenses of the plant. It does not matter whether the men are paid by the net or gross ton, by the yard or the foot, by the box or the car, or by the day, week or month; in other words it is inevitably true that the wages paid for the labor of mining and handling coal must be largely determined by its selling price.

The following table gives the total tons of lump coal and its average value per ton by districts, for twelve years:

Average value of lump coal per ton—2,000 pounds—at the mines.

YEARS.	Total tons lump coal	First District.	Second District.	Third District.	Fourth District.	Fifth District.	The State.	Increase, cents.	Decrease, cents.
1882.....	9,115,653	\$1.75	\$1.87	\$1.43	\$1.33	\$1.31	\$1.51	.....	.....
1883.....	10,030,991	1.59	1.97	1.45	1.32	1.26	1.48	.....	3
1884.....	10,101,005	1.49	1.75	1.31	1.09	.961	1.26	.....	22
1885.....	9,791,874	1.41	1.71	1.25	.985	.894	1.17	.....	9
1886.....	9,246,435	1.32	1.57	1.16	.969	.862	1.10	.....	7
1887.....	10,278,890	1.316	1.497	1.095	.887	.823	1.085	.....	1.5
1888.....	11,855,188	1.369	1.473	1.138	.947	.857	1.123	3.8	.....
1889.....	11,597,963	1.355	1.432	1.104	.965	.867	1.078	.....	4.5
1890.....	12,638,364	1.302	1.477	1.065	.873	.811	1.019	.....	5.9
1891.....	12,960,224	1.208	1.426	1.032	.853	.757	1.008	.....	1.1
1892.....	14,730,963	1.323	1.432	1.053	.836	.817	1.029	2.1	.....
1893.....	16,112,899	1.333	1.455	1.074	.836	.803	1.025	.....	.4
Net decrease—cents ..	*6,997,246	.417	.415	.357	.494	.507	.485	5.9	54.4
Per cent. decrease.....	*76.8	31.4	28.5	33.2	59.1	63.2	47.3	.....	.....

* Increase.

Reviewing this compilation of values for the twelve years, it is found that in nine of the years there has been a total decline of 54.4 cents per ton, while in two of the years, 1888 and 1892, a total increase of 5.9 cents, leaving a net decline of 48.5 cents per ton, or 47.3 per cent. during the eleven years.

The average value this year is found to be \$1.025 per ton. This is the decimal of a cent less than last year. Considered by districts, an increase in average value is shown in the First, Second and Third districts, or northern field, where higher values have been uniformly maintained, while in the Fourth district, or middle part of the State, the value is the same as last year, and less than in any previous years, and in the Fifth district, or southern field, there has been a decrease of 1.4 cents from last year, which is the lowest point ever reported for the district, excepting that in 1891, when the average value was 75.7 cents.

Referring to the column of tons, on which the average values are based, it is found that the volume of product has increased in the twelve years 6,997,246 tons, or nearly 77 per cent.

Supplemental to the foregoing, the following table gives in parallel columns the net decrease and percentages of same, in the average value of lump coal per ton at the mines, and the average prices paid per ton for hand-mining screened coal, for eleven years, 1882-1893, by districts, and for the State:

DISTRICTS.	Net decrease in the value of coal per ton— cents.	Per cent. of decrease.	Net decrease in the price paid for hand min- ing—cents.	Per cent. of decrease.
First.....	41.7	31.4	4.89	5.6
Second.....	41.5	28.5	7.56	8.3
Third.....	35.7	32.2	22.2	3.4
Fourth.....	49.4	59.1	15.38	27.7
Fifth.....	50.8	63.2	18.69	44.3
The State.....	48.5	47.3	8.75	12.3

It is proper to note here that these average values and other figures are based on returns made by the individual operator or owner to the inspectors and reported by them to the Bureau, therefore these statements can be taken as correct deductions from aggregations thus obtained.)

The total tonnage of lump coal produced for the last five years and its aggregate value, based on the values reported,

together with the aggregate valuation of the total product of all grades of coal mined in the State for the past three years, is presented as follows:

YEARS.	Total product in tons of lump coal.	Average value of lump coal per ton at the mine.	Aggregate value of total product of lump coal at the mine.	Aggregate value of total product at the mine.
1889	11,597,963	\$1.0775	\$12,496,885	.....
1890	12,638,361	1.0194	12,882,936	.....
1891	12,960,224	1.0084	13,068,854	\$14,237,094
1892	14,730,963	1.0291	15,158,430	16,243,645
1893	16,112,899	1.025	16,517,960	17,827,595

PRICES PAID FOR MINING BY HAND.

The continuity of the average prices paid per ton for hand-mining throughout the State is maintained in the reports from year to year; these averages have been and are now based on tons of screened coal, mined exclusively by hand, and where the miner has been paid by the ton for his labor in producing lump coal.

(Previous to 1888 the basis of these prices was fixed on almost the entire output of this grade of coal, the two following years, machinery and the different methods of paying for labor having been introduced, the basis of the average price was on only 80 per cent. of the lump tons; in 1890 it was only 72 per cent.; last year and the year before 50 per cent.; this year the average is obtained on 6,061,413 tons, or 38 per cent. of the total product of lump tons, and is 71.45 cents per ton. The following table gives average prices by districts and for the State, also the number of tons on which the price is based:

Average prices paid per ton for hand mining—lump coal.

YEARS.	Total tons mined by hand.	First District.	Second District.	Third District.	Fourth District.	Fifth District.	The State.	Increase, cents.	Decrease, cents.
1883.....	10,030,991	\$0.917	\$0.983	\$0.875	\$0.71	\$0.619	\$0.802	.....	.....
1884.....	10,101,005	.906	1.00	.873	.694	.60	.783	.....	1.9
1885.....	9,791,874	.867	.941	.814	.62	.511	.725	.....	5.8
1886.....	9,246,435	.859	.927	.729	.573	.501	.676	.....	4.9
1887.....	10,278,890	.891	.927	.688	.576	.537	.727	5.1	.....
1888.....	9,611,978	.8885	.9181	.7055	.6136	.5536	.7171	.....	.99
1889.....	9,251,250	.8918	.9241	.6991	.5991	.525	.7314	1.43	.....
1890.....	9,056,109	.8122	.817	.6708	.5833	.5108	.683	.....	4.84
1891.....	6,694,004	.8617	.8896	.69	.5854	.52	.7153	3.23	.....
1892.....	7,353,831	.8622	.9134	.6379	.5719	.4234	.7188	.35	.....
1893.....	6,061,413	.8681	.9074	.653	.5562	.4321	.7145	.....	.43
Decrease—cents.....	.....	4.89	7.56	22.2	15.33	18.69	8.75	10.11	18.86
Per cent. decrease.....	.....	5.6	8.3	3.4	27.7	44.3	12.3	.....	.....

By reference to the column for the State it is found that the average price is only the decimal of a cent less than last year, while that of the districts shows but slight changes either way. The relation that the price of mining has held to the value of coal during 11 years is set forth in the following table:

Ratios of the price of mining by hand per ton to the value of screened coal.

YEARS.	Tons mined.	First District.	Second District.	Third District.	Fourth District.	Fifth District.	The State.
1883	10,030,991	57.7	49.9	60.3	53.8	49.1	54.2
1884	10,101,005	60.8	55.9	66.7	63.7	62.4	62.1
1885	9,791,874	61.5	55	65.1	62.9	57.2	62
1886	9,216,435	65.1	59	62.8	59.1	58.1	61.5
1887	10,278,890	67.7	61.9	62.8	64.9	65.2	67
1888	9,611,978	64.9	62.3	62	64.8	64.6	63.9
1889	9,251,250	65.8	64.5	63.3	62.1	60.6	67.9
1890	9,056,109	62.4	60.3	63.8	66.8	63	67
1891	6,694,004	66.4	62.4	66.8	68.6	68.7	70.9
1892	7,353,831	65.2	63.8	60.6	68.4	51.8	69.8
1893	6,061,413	65.1	62.4	60.8	66.5	53.8	69.7

This table shows the ratio that the average price paid for hand-mining per ton has sustained to the average value of coal per ton at the mines throughout the State; in other words, these figures are the percentages of the average value of coal per ton that is paid for the labor of hand-mining, and they are based on the average value per ton of the total output of screened coal, and the prices paid per ton for mining this grade of coal where the labor is paid for by the ton and performed exclusive of machinery. Taking the column for the State very little difference is observed in the last five years, although in some of the districts varied changes have occurred.)

SCREENED AND UNSCREENED COAL.

The law providing that the mining of coal shall be paid for on the basis of the quantity of coal delivered in pit-cars by each miner to the operator, before being subjected to any process of screening, has now been in operation for two years. Special inquiry has been made as to the application of this system, commonly termed the gross-weight law, of paying for mining coal throughout the State for the past two years. From the returns of the mines where the plan has prevailed it is found that last year the system was adopted at 77 mines, or about 9 per cent. of the whole, producing 4,687,485 tons; the average rate paid

per ton for mining being 51.7 cents. This year returns have been gathered from 92 mines, or 12 per cent. of the whole, reporting 5,879,454 tons, with an average price paid per ton of 53.3 cents.

In order to present this matter as fully as possible that comparisons may be made between the two systems, the following table is presented:

Total tons of screened and unscreened coal, with the average price of mining and differences in rates for the years 1892 and 1893.

DISTRICTS.	FOR THE YEAR 1892.					FOR THE YEAR 1893.				
	SCREENED COAL.		UNSCREENED COAL.		Difference in average prices, cents.	SCREENED COAL.		UNSCREENED COAL.		Difference in average prices, cents.
	Lump—tons.	Average rate—cents.	Gross—tons.	Average rate—cents.		Lump—tons.	Average rate—cents.	Gross—tons.	Average rate—cents.	
First.....	2,208,524	86.2	705,972	73.5	12.7	2,039,706	86.8	806,451	73.8	13
Second	676,808	91.3	970,593	70.8	20.5	877,166	90.7	1,014,257	71.4	19.3
Third	1,278,948	63.8	1,233,943	56.4	7.4	1,575,457	65.3	1,104,563	51.5	13.8
Fourth.....	698,082	57.2	1,074,156	42.1	15.1	366,977	55.6	2,149,436	44.5	11.1
Fifth.....	820,127	42.3	702,821	41.2	1.1	1,202,107	43.2	804,747	36.2	7
The State...	5,682,489	71.9	4,687,485	51.7	20.2	6,061,413	71.5	5,879,454	53.3	18.2

This sets forth the relative differences in tonnage and prices paid in working the two systems, also the differences in prices of mining by districts and for the State. The prices given here for both screened and unscreened coal are based on tons mined exclusively by hand and paid for by the ton. The increase in the tonnage of unscreened coal has been about 25 per cent. and of lump coal about 7 per cent. For screened coal the average price per ton for the State is four-tenths of a cent less than last year; while for unscreened coal an advance is found of one and six-tenths cents.

The difference in the average price paid per ton between the two rates last year was 20.2 cents, this year it is 18.2 cents.

The percentage of lump coal reported last year at gross-weight mines was 79.7, at all other mines 83.4; this year at the former 78.9, at the latter 81.6. The question as to whether the gross-weight method of paying for hand-mining, so far, has proven advantageous to the miner or otherwise, cannot as yet be made clear. Following will be found detailed tables for the

last two years by counties and districts with recapitulations, of all mines reported in the State, where the gross-weight law has been adopted:)

Summary of coal mined by hand, where the mining was paid for exclusively by the ton and for the gross weight—1892.

COUNTIES AND DISTRICTS.	Number of mines.	Number of men employed.	Average number of days worked.	Average prices paid per ton for mining.	Total tons of coal mined.	Total tons of lump coal.	Total tons of other grades.
THE STATE	77	9,477	212.2	\$0 517	4,687,485	3,736,852	950,633
FIRST DISTRICT.....	9	1,865	221.7	\$0 735	705,972	582,941	123,031
LaSalle	7	1,726	218.7	\$0 751	649,967	546,284	103,683
Livingston	2	139	232	0 55	56,005	36,657	19,348
SECOND DISTRICT.....	9	2,095	204.2	\$0 708	970,593	782,016	188,577
Bureau	4	1,559	214.8	\$0 75	703,712	590,991	112,721
Henry	1	45	255	0 55	26,280	18,800	7,460
Marshall	1	72	180	0 75	15,853	15,053	800
Mercer.....	2	377	179	0 55	212,340	147,851	64,489
Schuyler.....	1	42	186	0 533	12,428	9,321	3,107
THIRD DISTRICT	34	2,469	205.5	\$0 564	1,233,943	977,238	255,715
Fulton	13	1,021	199.8	\$0 545	524,340	411,330	113,010
McLean.....	2	100	175.5	0 476	69,372	55,912	13,460
Peoria	10	529	217.4	0 606	262,696	202,421	60,275
Tazewell.....	3	118	222.3	0 543	70,146	48,820	21,326
Vermilion	5	446	199.4	0 529	219,669	189,425	30,244
Woodford.....	1	255	206	0 73	87,720	69,320	18,400
FOURTH DISTRICT	14	1,587	242.2	\$0 421	1,074,156	833,933	240,223
Christian	3	494	204.3	\$0 318	360,052	213,189	146,863
Macon	3	408	259.7	0 534	227,020	198,375	28,645
Macoupin.....	3	313	271.3	0 409	209,662	180,672	28,990
Sangamon.....	5	372	237	0 472	277,422	241,697	35,725
FIFTH DISTRICT	11	1,461	193.3	\$0 412	702,821	560,734	142,087
Marion.....	3	482	259	\$0 421	294,019	245,019	49,000
Perry.....	8	979	168.6	0 403	408,802	315,715	93,087

Recapitulation by Districts—1892.

DISTRICTS.	Number of mines.	Number of men employed.	Average number of days worked.	Average prices paid per ton for mining.	Total tons of coal mined.	Total tons of lump coal.	Total tons of other grades.
First	9	1,865	221.7	\$0 735	705,972	582,941	123,031
Second	9	2,095	204.2	0 708	970,593	782,016	188,577
Third	34	2,469	205.5	0 564	1,233,943	977,228	256,715
Fourth	14	1,587	242.2	0 421	1,074,156	833,933	240,223
Fifth	11	1,461	193.3	0 412	702,821	560,734	142,087
The State	77	9,477	212.2	\$0 517	4,687,485	3,736,852	950,633

Summary of coal mined by hand, where the mining was paid for exclusively by the ton and for the gross weight—1893.

COUNTIES AND DISTRICTS.	Number of mines.	Number of men employed.	Average number of days worked.	Average prices paid per ton for mining.	Total tons of coal mined.	Total tons of lump coal.	Total tons of other grades.
THE STATE	92	11,033	230.5	\$0 5332	5,879,454	4,637,966	1,241,478
FIRST DISTRICT	10	1,907	243.4	\$0 738	806,451	680,019	126,432
LaSalle	8	1,735	245.5	\$0 754	739,627	628,195	111,432
Livingston	2	172	235	0 561	66,824	51,824	15,000
SECOND DISTRICT	8	2,525	243	\$0 714	1,014,257	829,583	184,674
Bureau	4	1,957	223.5	\$0 75	749,305	626,716	122,589
Henry	1	49	275	0 60	24,209	22,409	1,800
Marshall	1	74	270	0 75	20,128	18,944	1,184
Mercer	2	445	252.5	0 60	220,615	161,514	59,101
THIRD DISTRICT	35	2,188	209.9	\$0 515	1,104,563	899,293	205,270
Fulton	13	685	216.8	\$0 533	363,515	282,297	81,218
McLean	2	96	252.5	0 528	50,200	36,400	13,800
Menard	2	226	178	0 434	122,995	96,576	26,379
Peoria	12	547	188.7	0 533	263,362	207,049	56,313
Tazewell	3	169	236.6	0 533	85,745	70,385	15,360
Vermilion	2	184	207	0 48	108,838	108,838	.....
Woodford	1	281	280	0 75	109,948	97,748	12,200
FOURTH DISTRICT	29	3,215	254.4	\$0 445	2,149,436	1,670,315	479,121
Christian	3	536	215.3	\$0 319	366,388	208,661	157,727
Macon	3	456	294	0 524	280,233	237,442	42,791
Macoupin	2	217	278.5	0 417	154,467	130,329	24,140
Madison	1	40	207	0 50	13,236	12,436	800
Montgomery	3	276	258.3	0 551	175,712	123,920	51,792
Sangamon	16	1,642	252.4	0 44	1,137,900	936,629	201,271
Scott	1	48	275	1 12½	21,509	20,900	600
FIFTH DISTRICT	10	1,193	210	\$0 362	804,747	558,766	245,981
Marion	2	222	225	\$0 374	124,000	82,400	41,600
Perry	8	976	206.4	0 359	680,747	76,366	204,381

Recapitulation by Districts—1893.

DISTRICTS.	Number of mines.	Number of men employed.	Average number of days worked.	Average prices paid per ton for mining.	Total tons of coal mined.	Total tons of lump coal.	Total tons of other grades.
First	10	1,907	243.4	\$0 738	806,451	680,019	126,432
Second	8	2,525	243	0 714	1,014,257	829,583	184,674
Third	35	2,183	209.9	0 515	1,104,563	899,293	205,270
Fourth	29	3,215	254.4	0 445	2,149,436	1,670,315	479,121
Fifth	10	1,193	210	0 362	804,747	558,766	245,981
The State	92	11,033	230.5	\$0 533	5,879,454	4,637,966	1,241,478

MINING MACHINES.

The introduction and application of the mining machine to the process of mining coal in some of the seams of the State has, for a number of years, passed from the experimental and become fixed and successful. The record for the year is for 41 mines, the same number as reported last year; the number of machines in operation has increased ten, with an increase of 539,051 tons of lump coal cut by machines, and 638 men employed at these mines.

The following comparative table for the last six years shows the record of machine mining:

YEARS.	Number of mines.	Number of machines.	Number of tons cut—lump coal.	Percent. of total product.	Number of men employed.	Percent. of total number of men.
1888.....	39	272	2,248,210	18.9	3,088	10.5
1889.....	35	235	2,346,715	20.2	3,439	11.4
1890.....	34	266	2,881,983	22.8	3,141	10.9
1891.....	34	241	2,423,080	18.7	3,005	9.1
1892.....	41	300	3,002,893	20.4	3,646	10.8
1893.....	41	310	3,541,944	22	4,314	12.2

The total number of tons of all grades mined by machines during the year was 4,595,130 tons, or over 25 per cent. of the total product of the State, and giving employment to 4,314 men.

Reviewing the different kinds of machines used in cutting coal, it is found that there are nine distinct patents in use, each claiming recognition and worthiness in certain particulars for coal cutting. Following is a list of the number of each in use for the past six years:

NAME OF MACHINES.	1888.	1889.	1890.	1891.	1892.	1893.
Harrison.....	245	189	214	168	190	192
Ingersoll-Sergeant.....			4	12	40	63
Choteau.....		14	26	27	27	24
Yock.....	10	15	6	10	19	14
Kangley.....			5	7	13	5
Legg.....	17	17	7	11	5	
Sperry.....			4	5	5	
Jeffrey.....					1	10
Stanley Header.....				1	2	2
Totals.....	272	235	266	241	300	310

The location of the different machines throughout the coal-fields, the number in use and the number of tons cut the past year is given in the following table:

DISTRICTS.	NUMBER AND KINDS OF MACHINES IN USE.								Total tons produced.
	Harrison.	Ingersoll-Sergeant.	Choteau.	Yock.	Kangley.	Stanley Header.	Jeffrey.	Total.	
First.....					5		*5	10	90,795
Second.....		7						7	58,709
Third.....		45	12					187	2,914,902
Fourth.....	139	11	12	14		2	5	106	1,530,724
Fifth.....	62								
Totals.....	192	63	24	14	5	2	10	310	4,595,130

* Formerly known as the "Legg."

It is observed that machine-mining is confined almost exclusively to the Fourth and Fifth districts, where the seams are thick and otherwise favorable for their successful operation. In the Second district no machine-mining has been reported for the last three years, while the First and Third districts show a large falling off in tons cut from last year. The number of machines in use in the different districts for the past six years is given in the following table:

DISTRICTS.	1888.	1889.	1890.	1891.	1892.	1893.
First.....	33	26	27	19	21	10
Second.....	8	18	12			
Third.....	13	8	6	6	10	7
Fourth.....	120	105	152	149	175	187
Fifth.....	98	78	69	67	94	106
Totals	272	235	266	241	300	310

The capacity of the different machines as to their relative performance, based on the total tonnage, number of men and days at mines where machines are used exclusively, is shown in the following table:

KINDS OF MACHINES.	Number of mines.	Number of machines.	Average number of tons produced by each machine.	Average number of men to each machine.	Average number of days worked.
Harrison	21	187	16,357	14.1	240.9
Ingersoll-Sergeant	8	51	13,634	14.8	255.9
Choteau.....	3	18	17,784	20.1	319
Yock and Sergeant	1	7	10,438	8.8	240
Yock and Harrison.....	1	7	9,091	13.6	222
Yock and Stanley Header	1	7	6,239	10	300
Choteau and Sergeant	1	7	8,174	6.4	200
Choteau and Stanley Header	1	4	15,950	17	240
Totals, 1893.....	37	288	15,193	14.2	250.4
Totals, 1892.....	34	270	13,753	12.7	229.7
Increase.....	3	18	1,440	1.5	20.7

This is the record of 288 machines at 37 mines, showing that with an average force of 14 men, operating 250 days, 15,193 tons have been produced to each machine. There are 22 other machines located at four other mines, which have cut 219,504 tons; these are at mines where coal is partly mined by hand.

Arranged by counties, the following shows the distribution of machines at mines where all coal is cut exclusively by this process:

COUNTIES.	Number of mines.	Number of machines.	Number of men employed.	Average number of days.	Total number of tons mined.	Total tons of lump coal.
Bond.....	1	6	104	236	78,600	56,120
Christian.....	2	16	198	265.5	227,144	184,941
Clinton.....	1	9	107	166	81,069	61,799
Jackson.....	6	42	619	256.2	586,660	430,390
Macoupin.....	8	114	1,385	243.9	1,746,051	1,304,259
Madison.....	6	45	745	256.8	774,028	614,497
Perry.....	1	3	47	225	27,000	24,000
Sangamon.....	1	6	99	274	89,079	86,826
St. Clair.....	10	42	651	253.9	653,839	504,908
Williamson.....	1	5	136	136	111,156	94,937
Totals.....	37	288	4,091	250.4	4,375,626	3,362,675

Another classification of machine mines is presented. This is a list of all mines in the State where machines are employed in cutting coal, and includes four where the coal is partly mined by hand:

Mines in which machines are used.

NAME OF COMPANY.	Location.	PRODUCT OF MINES.		Number of machines.	Names of machines.	Number of men employed.	No. of days in operation during the year.
		Total tons mined.	Tons mined by machine.				
Consol. Coal Co., No. 8....	Mt. Olive	304,939	304,939	18	Harrison.....	206	255
Consol. Coal Co., No. 6....	Staunton	302,449	302,449	23	"	256	211
Consol. Coal Co., No. 10...	Mt. Olive	290,509	290,509	14	"	197	247
Mt. Olive Coal Co.....	"	227,973	227,973	12	Choteau.....	170	292
Consol. Coal Co., No. 7....	Staunton	215,816	215,816	16	Harrison.....	167	265
St. L. Ore & Steel Co., No. 5	Murphysboro	209,890	209,890	10	"	226	258
Muddy Valley M. & M. Co.	Muddy Valley *	196,285	70,000	5	Jeffrey.....	60	212
Taylorville Coal Co., Nos. 1, 2	Taylorville...	195,263	195,263	11	Harrison.....	146	271
Girard Coal Co.....	Girard	189,591	189,591	12	Ingersoll-Serg't.	149	282
Cons'l. C. Co., Abbey No. 3	Collinsville...	184,729	184,729	6	Harrison.....	130	265
Consol. C. C., Heintz Bluff	Collinsville...	184,077	184,077	10	"	141	256
Madison Coal Co., No. 2....	Glen Carbon..	184,032	184,032	8	Ingersoll-Serg't.	202	298
St. L. Ore & Steel Co., No. 4	Murphysboro	154,713	154,713	9	Harrison.....	170	252
Consol. C. Co., Abbey No. 4	Collinsville...	136,376	136,376	6	"	105	241
Star Coal Co., No. 1	Carbon Hill ..	123,796	21,631	5	Kangley.....	51	195
Consol. Coal Co., Gillespie	Gillespie.....	121,639	121,639	11	Harrison.....	134	298
Crystal Plate Glass Co....	Fredonia.....	111,156	111,156	5	"	136	265
Consol. C. Co., St. Bernard	Clyde	93,135	9,135	8	"	106	191
Madison Coal Co., No. 1....	Glen Carbon..	92,299	92,299	8	Ingersoll-Serg't.	110	300
Wil. & Springfield Coal Co.	Ridgely	89,079	89,079	6	Harrison.....	99	274
Consol. Coal Co., Knecht....	Belleville.....	83,899	83,899	4	"	55	256
Athens Mining Co.....	Athens	83,154	58,709	7	Ingersoll-Serg't.	65	228
Consolidated Coal Co.....	Trenton	81,069	81,069	9	Harrison.....	107	166
Sorento Coal Co.....	Sorento	78,600	78,600	6	Ingersoll-Serg't.	104	236
M. and H. Zinc Co.....	LaSalle	\$ 77,448	69,114	5	Jeffrey.....	47	310
Consol. Coal Co., Troy	Troy	73,822	73,822	7	Harrison.....	94	222
Gartside Coal Co., No. 4....	Murphysboro	73,064	73,064	1	Ingersoll-Serg't.	62	240
Consol. C. C., Greenmount	Belleville.....	71,130	71,130	6	Yock.....	26	232
Consol. C. C., Schureman	"	68,234	68,234	4	Harrison.....	44	239
Cons'l. C. Co., Gartside No. 4	"	65,481	65,484	5	"	60	320
Glendale Coal Co.....	"	63,800	63,800	1	Stanley Header.	63	240
St. Louis Ore & Steel Co., Harrison SH.....	Murphysboro	63,640	63,640	3	Choteau.....	95	222
Maule Coal Co., Main	Belleville.....	63,000	63,000	5	Harrison.....	170	300
Gartside Coal Co., No. 3....	Murphysboro	57,220	57,220	2	Yock.....	45	200
Madison Coal Co., No. 3....	Edwardsville..	55,069	55,069	3	Choteau.....	68	200
Leban'n Coal & Mach. As'n	Lebanon.....	43,676	43,676	1	Ingersoll-Serg't.	70	300
Oakland Coal Co.....	Belleville.....	36,859	36,859	6	Stanley Header.	26	246
Edinburg Coal Co.....	Edinburg.....	31,881	31,881	6	Yock.....	52	260
Gartside Coal Co., No. 1....	Murphysboro	29,133	29,133	3	Ingersoll-Serg't.	21	265
Egyptian Mining Co.....	DuQuoin.....	27,000	27,000	2	Choteau.....	47	225
Consol. Coal Co., Rose Hill	Belleville.....	21,331	21,331	3	Ingersoll-Serg't.	26	165
Totals 1893, 41 mines...		4,856,309	4,595,130	310		4,314	**249
Totals 1892, 41 mines...		4,368,639	3,866,289	300		3,646	231.4
Increase for 1893 over 1892.		487,670	728,841	110		668	17.6

* 126,285 tons mined by hand.

† 102,115 tons mined by hand.

‡ 4,445 tons mined by hand.

\$ 8,334 tons mined by hand.

‡ Formerly known as the Legg.

† Decrease.

** Average.

A final classification is made of mines where machines are used exclusively; there has been an increase over last year of 3 mines; the output of tons of all grades has increased nearly 20 per cent. and that of lump tons about 16 per cent; the increase of employes has been 19 per cent. with an increased average of 19 days.

Mines in which machines are used exclusively.

NAME OF COMPANY.	Location.	PRODUCT OF THE MINES.		Number of ma- chines.	Names of machines.	Number of men employed.	Number of days worked.
		Total tons mined by ma- chine.	No. of tons of lump coal.				
Consol. Coal Co., No. 8....	Mt. Olive.....	304,939	218,301	18	Harrison.....	206	255
Consol. Coal Co., No. 6....	Staunton.....	302,449	219,458	23	".....	256	211
Consol. Coal Co., No. 10....	Mt. Olive.....	290,509	210,169	14	".....	197	247
Mt. Olive Coal Co.....	Mt. Olive.....	227,973	173,420	12	Choteau.....	170	232
Consol. Coal Co., No. 7....	Staunton.....	215,816	142,707	16	Harrison.....	167	265
St. L. Ore & Steel Co., No. 5	Murphysboro	209,890	148,190	10	".....	226	258
Taylorv'l Coal Co., Nos. 1, 2	Taylorville....	195,263	158,522	11	".....	146	271
Girard Coal Co.....	Girard.....	189,591	176,290	12	Ingersoll-Serg't.	149	232
Consol. C. Co., Abbey No. 3	Collinsville....	184,729	143,151	6	Harrison.....	130	265
Consol. C. Co., Heintz Bluff	Collinsville....	184,077	139,181	10	".....	141	256
Madison Coal Co., No. 2....	Glen Carbon....	184,032	161,867	8	Ingersoll-Serg't.	202	298
St. L. Ore & Steel Co., No. 4	Murphysboro	154,713	115,240	9	Harrison.....	170	252
Consol. C. Co., Abbey No. 4	Collinsville....	136,376	91,214	6	".....	106	241
Consol. Coal Co., Gillespie	Gillespie.....	121,639	93,173	11	".....	131	208
Crystal Plate Glass Co....	Fredonia.....	111,156	94,937	5	".....	136	265
Consol. C. Co., St. Bernard	Clyde.....	93,135	70,699	8	".....	106	191
Madison Coal Co., No. 1....	Glen Carbon....	92,299	70,344	8	Ingersoll-Serg't.	110	300
Wil. & Springfield Coal Co.	Ridgely.....	89,079	86,826	6	Harrison.....	99	274
Consol. Coal Co., Knecht....	Belleville.....	83,899	60,170	4	".....	55	256
Consolidated Coal Co.....	Trenton.....	81,069	61,799	9	".....	107	166
Sorento Coal Co.....	Sorento.....	78,600	56,120	6	Ingersoll-Serg't.	104	236
Consol. Coal Co., Troy....	Troy.....	73,822	48,168	7	Harrison.....	94	222
Gartside Coal Co., No. 4....	Murphysboro	73,064	50,468	1	Ingersoll-Serg't.	62	240
Consol. C. Co., Green Mt.	Belleville.....	71,130	52,957	3	Yock.....	26	232
Consol. C. Co., Schurem'n	Belleville.....	68,284	48,052	4	Harrison.....	44	239
Con. C. Co., Gartside No. 4	Belleville.....	65,484	53,324	5	".....	60	320
Glendale Coal Co.....	Belleville.....	63,800	51,000	1	Stanley Header.	68	240
St. Louis Ore & Steel Co.,	Murphysboro	63,640	45,614	3	Choteau.....	95	222
Harrison SH.....				5	Harrison.....		
Maule Coal Co., Main....				2	Yock.....		
Gartside Coal Co., No. 3....	Belleville.....	63,000	60,000	4	Choteau.....	170	300
Gartside Coal Co., No. 3....	Murphysboro	57,220	42,095	3	Choteau.....	45	200
Madison Coal Co., No. 3....	Edwardsville..	55,069	51,778	4	Ingersoll-Serg't.	68	200
Lebanon Coal & M. Ass'n	Lebanon.....	43,676	39,325	6	".....	70	300
Oakland Coal Co.....	Belleville.....	36,859	33,168	1	Stanley Header.	26	246
Edinburg Coal Co.....	Edinburg.....	31,881	26,419	6	Yock.....	52	260
Gartside Coal Co., No. 1....	Murphysboro	29,131	28,783	3	Ingersoll-Serg't.	21	265
Egyptian Mining Co.....	DuQuoin.....	27,000	24,000	2	Choteau.....	47	225
Consol. Coal Co., Rose Hill	Belleville.....	21,331	15,668	2	Harrison.....	26	165
Totals (37 mines).....		4,375,426	3,362,679	288		4,091	.....
Averages.....		118,260	90,883	7.8		110.6	250.4
Totals, 1892 (34 mines)...		3,664,590	2,911,367	270		3,439	7,869
Averages, 1892.....		107,782	85,628	7.9		101	231.4
Increase over 1892 (3 mines)		711,836	451,312	18		652	19

WAGES OF MEN IN MACHINE MINES.

The record of wages paid to men employed at machine mines has heretofore been made in averages for the State. This year special attention was given to this matter, and carefully collected reports were secured from each of the mines where machines are used exclusively for cutting or undermining the coal. The record is complete for 36 of the 37 mines of this character,

and is set forth in the following table giving the number of men employed, rates of wages and average days of running-time at each mine:

Rates of wages of men employed in exclusively machine mines.

NAME OF COMPANY.	CUTTERS		BLAST-ERS.		HELPERS		LABORERS & OTHERS.		LOADERS.		TIMBER-MEN.		Number of days worked.
	Number of men.	Rate per day	Number of men.	Rate per day	Number of men.	Rate per day	Number of men.	Rate per day	Number of men.	Rate per day	Number of men.	Rate per day	
Consol. Coal Co., No. 6.	30	\$2 25	20	\$2 00	30	\$1 75	56	\$1 75	100	\$1 75	20	\$2 00	211
" " " 7.	16	2 25	14	2 00	16	1 75	37	1 75	70	1 75	14	2 00	265
" " " 8.	21	2 25	15	2 00	21	1 75	46	1 75	88	1 75	15	2 00	255
" " " 10.	21	2 25	14	2 00	21	1 75	47	1 75	80	1 75	14	2 00	267
Con. C. Co., Abbey No. 3	12	2 25	12	2 00	12	1 75	32	1 75	50	1 75	12	2 00	255
" " " 4	6	2 25	6	2 25	6	1 75	22	1 75	60	1 75	6	2 00	241
" " Heintz Bl'ff	12	2 25	12	2 00	12	1 75	37	1 75	56	1 75	12	1 75	256
" " Gillespie...	14	2 25	12	2 00	14	1 75	26	1 75	56	1 75	12	2 00	268
" " St. Bernard	10	2 25	8	2 00	10	1 75	25	1 75	45	1 75	8	2 00	191
" " Knecht....	4	2 25	4	2 25	4	1 75	10	1 75	29	1 75	4	2 00	256
" " Trenton....	9	2 25	9	2 25	9	1 75	26	1 75	45	1 75	9	2 12½	166
" " Troy	9	2 25	9	2 00	9	1 75	22	1 75	36	1 75	9	2 00	222
" " Green Mt..	3	2 25	3	2 25	3	1 75	2	1 75	13	1 75	2	2 00	232
" " Schureman	4	2 25	4	2 25	4	1 75	10	1 75	18	1 75	4	2 00	239
" " Gartside, 4.	5	2 25	5	2 25	5	1 75	13	1 75	27	1 75	5	2 00	320
" " Rose Hill...	2	2 25	2	2 25	2	1 75	6	1 75	12	1 75	2	2 00	165
Crystal Plate Glass Co.	10	2 25	10	2 00	10	1 75	43	1 65	60	1 75	3	2 10	265
Edingburg Coal Co....	*	.....	3	2 25	*	.....	20	1 75	*	.....	1	2 25	260
Egyptian Mining Co....	3	.....	3	2 25	3	1 75	18	1 75	16	1 65	4	2 00	225
Gartside Coal Co., No. 1	2	2 50	1	2 25	2	1 90	7	1 40	8	1 75	1	2 25	265
" " " 3	7	2 50	2	2 25	7	1 90	9	1 40	15	1 75	5	2 25	200
" " " 4	7	2 50	2	2 25	7	1 90	21	1 40	20	1 75	5	2 25	240
Girard Coal Co.....	†	.....	10	2 25	10	1 90	30	1 75	†	.....	4	2 00	282
Glendale Coal Co.....	4	2 25	8	2 00	8	1 75	14	1 75	32	1 75	2	2 00	240
Lebanon C. & Mach. Co.	6	2 25	2	2 25	6	1 75	24	1 75	22	1 75	10	2 00	300
Madison Coal Co., No. 1	16	2 25	8	2 00	16	1 75	22	1 75	40	1 75	8	2 00	300
" " " 2	24	2 25	24	2 00	16	1 75	39	1 75	75	1 75	24	2 00	298
" " " 3	9	2 25	4	2 00	9	1 75	18	1 75	24	1 75	4	2 00	200
Mt. Olive Coal Co.....	§	.....	12	2 25	§	.....	74	1 75	48	2 25	12	2 00	292
Maule Coal Co., Main...	†	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oakland Coal Co.....	3	2 25	3	2 25	3	1 75	5	1 75	11	1 75	1	2 00	216
Sorento Coal Co.....	**	.....	**	.....	**	.....	5	1 75	4	.....	5	2 25	236
St. L. Ore & S. Co., No. 4	15	2 25	10	2 25	15	1 75	79	1 50	42	1 75	9	2 00	252
" " " 5	16	2 25	10	2 25	16	1 75	95	1 50	79	1 75	10	2 00	258
S. L. O. & S. Co., Harris'n	8	2 25	2	2 25	8	1 75	51	1 50	23	1 75	3	2 00	222
Taylorville Coal Co....	13	2 50	4	2 25	13	2 00	40	1 75	††	.....	6	2 00	271
Wil. & Springfield C. Co.	8	2 25	14	2 25	8	1 75	39	1 75	26	1 75	4	2 00	274
Totals (36 mines)....	329	.....	281	.....	335	.....	1,123	.....	1,326	.....	269	.....	.....
Averages .....	.....	\$2 27	.....	\$2 10	.....	\$1 77	.....	\$1 68	.....	\$1 75	.....	\$2 02	249

* Edinburg { 5 cutters, rate 6¼c per lineal foot.
5 helpers, rate 3¾c per lineal foot.
18 loaders, rate 15c per car.

† Girard { 20 cutters, rate 1½c per square foot.
75 loaders, rate 15c per car.

‡ Maule C. Co., not reported.

§ Mt. Olive { 12 cutters, rate 1c per square foot.
12 helpers, rate ¾c per square foot.

** Sorento { 6 cutters, rate 5c per lineal foot.
4 blasters, rate 1c per square foot.
6 helpers, rate 4c per lineal foot.
25 loaders, rate 14c per car.

†† Taylorville, 70 loaders, rate 22c per ton for blasting and loading.

These mines are located in the Fourth and Fifth districts, and, as will be observed, the wages paid to the different classes of workmen are about on a level throughout these fields.

A table is also given showing the average wages paid the different classes of workmen in machine mines for the past six years:

Average wages of machine men for six years.

YEARS.	Total tons of coal mined.	RATES OF WAGES PER MAN PER DAY.					
		Cutters.	Blasters.	Helpers.	Laborers and others.	Loaders.	Timber-men.
1888	2,243,219	\$2 33	\$2 07	\$1 70	\$1 61	\$1 79	\$2 02
1889	2,346,913	2 34	2 09	1 78	1 66	1 80	2 07
1890	2,381,983	2 29	2 07	1 77	1 73	1 78	2 04
1891	2,423,080	2 36	2 25	1 77	1 75	1 88	2 11
1892	3,664,599	2 27	2 20	1 74	.....	1 75	2 05
1893	4,375,626	2 27	2 10	1 77	1 68	1 75	2 02

The effect of the commonly named gross-weight law, which has been in operation for the past two years, has caused many changes where adopted throughout the State, in the manner of paying for hand-mining. Last year the tendency then seemed to be for the payment of miners and others by the day, and reports were obtained from 67 mines employing 2,986 men; however, the information was only from three districts, the Third, Fourth and Fifth. This year statistics were gathered from all of the districts, though it was found that the method had only been adopted in one small mine in each of the First and Second districts, while in the Third and Fourth districts the number of mines has decreased from 18 and 11 to 5 and 3 respectively, and from 38 to 30 in the Fifth district, making a total of 40 mines. The following table gives the condensed information obtained:

Average wages of hand-miners working by the day.

DISTRICTS.	No. of mines.	No. of employes.	Average number of days per mine.	Total number of tons mine.	AVERAGE PRICE PAID PER MAN PER DAY.					
					Miners.	Blasters.	Timber-men.	Loaders.	Laborers and others.	Average for all for the districts.
First	1	9	312	6,100	\$2 15	.....	\$2 50	.....	.....	\$2 19
Second	1	5	270	2,160	1 55	.....	.....	.....	.....	1 55
Third	5	281	204.4	134,478	2 10	\$2 25	2 00	*	†	2 11
Fourth	3	239	272.3	201,047	2 25	2 25	1 89	\$1 97	\$1 72	1 99
Fifth	30	1,486	214.6	1,447,029	2 13	2 19	1 98	1 76	1 75	1 88
The State	40	2,020	219.7	1,790,814	\$2 14.5	\$2 20	\$1 98.3	\$1 76.2	\$1 78	\$1 90.2
The State, 1892.	67	2,986	199.1	2,112,217	2 16.4	2 18.2	1 97	1 73	.....	2 00

* 50 men paid 18c per car.

† 159 men paid from \$1.25 to \$1.75 per day.

While the 40 mines here represented reported 2,020 men working by the day, the average daily wages is based on the experience of only 1,766, leaving 254 men paid by the piece. It will be seen that average wages of the different classes are about on a plane with those of last year, and by comparison will be found to average a little above that of the men in the machine mines.

From this showing it would seem that the system of employing men by the day in hand-mines is alike unsatisfactory to the employés and employer.

THE PAYMENT OF WAGES.

The law passed by the last General Assembly of the State providing for the weekly payment of wages by corporations has now been in operation two years. In gathering statistics for this report a special inquiry was made, through the State Inspectors, as to the workings of the law among the coal mines for the past year. The returns obtained were very complete, and gave the intervals at which payments of wages were made at each mine throughout the State.

From these returns, a condensed table is presented by counties and districts of all coal mines in the State:

Payment of wages—weekly, semi-monthly or monthly at all coal mines in this State.

DISTRICTS.	TOTALS.				WAGES PAID WEEKLY.			
	Number of mines.	Number of men.	Average number of days.	Total number of tons.	Number of mines.	Number of men.	Average number of days.	Total tons mined.
THE STATE.....	772	35,357	192	19,946,584	516	9,756	175	5,234,955
FIRST DISTRICT....	71	8,831	205	3,394,686	27	649	187	268,541
Grundy	24	3,644	205	1,186,919	11	399	196	132,924
Kankakee.....	2	284	170	88,700	1	8	160	3,000
LaSalle.....	28	3,409	212	1,494,826	9	150	187	96,323
Livingston.....	14	1,207	196	542,516	5	86	192	35,995
Will	3	287	200	81,725	1	6	95	300

Payment of wages—weekly, semi-monthly or monthly at all coal mines in the State—Continued.

DISTRICTS.	TOTALS.				WAGES PAID WEEKLY.			
	Number of mines.	Number of men.	Average number of days.	Total number of tons.	Number of mines.	Number of men.	Average number of days.	Total tons mined.
SECOND DISTRICT..	217	5,777	171	1,998,204	182	1,478	155	286,181
Bureau.....	18	2,990	220	1,143,270	.....	.....	.....	.....
Hancock.....	4	34	185	5,060	4	34	151	5,060
Henry.....	28	544	208	156,261	22	196	199	39,688
Knox*.....	32	228	162	49,348	31	207	165	40,194
Marshall.....	12	277	166	92,144	10	19	147	3,756
McDonough.....	33	550	119	102,926	33	550	119	102,926
Mercer.....	19	710	181	363,206	14	63	169	15,140
Rock Island.....	18	153	162	34,308	17	138	157	29,476
Schuyler.....	7	80	161	18,735	5	60	141	14,995
Stark.....	24	130	158	23,070	24	130	158	23,070
Warren.....	22	81	147	11,876	22	81	147	11,876
THIRD DISTRICT....	236	6,964	286	3,397,433	170	2,464	166	1,065,910
Cass.....	3	56	265	23,150	3	56	240	23,150
Fulton.....	72	1,577	156	772,497	56	440	144	170,398
Logan.....	3	298	258	189,319	2	168	244	96,120
McLean.....	3	436	262	204,827	3	436	262	204,827
Menard.....	9	542	200	281,635	5	195	192	105,160
Peoria.....	72	1,374	172	620,149	38	186	161	69,405
Tazewell.....	10	299	236	128,957	38	166	237	56,470
Vermilion.....	62	1,939	173	996,768	55	817	169	340,380
Woodford.....	2	443	252	180,131	.....	.....	.....	.....
FOURTH DISTRICT†.	95	7,005	236	5,784,346	45	1,238	231	836,854
Bond.....	1	104	236	78,600	.....	.....	.....	.....
Calhoun.....	1	16	270	4,584	1	16	270	4,584
Christian.....	6	1,104	230	839,650	3	238	257	245,574
Greene.....	5	55	223	10,995	5	55	223	10,995
Jersey.....	4	21	278	5,904	4	21	278	5,904
Macon.....	3	456	294	280,233	3	456	270	280,233
Macoupin.....	16	1,791	250	1,988,069	3	17	247	6,435
Madison.....	22	1,008	236	951,894	12	93	219	35,227
Montgomery.....	3	276	258	175,712	1	142	304	115,792
Morgan.....	3	14	162	2,142	3	14	162	2,142
Sangamon.....	21	2,027	255	1,410,346	2	146	250	120,251
Scott.....	4	59	239	22,757	3	11	227	1,257
Shelby.....	6	74	182	13,460	5	29	182	8,460
FIFTH DISTRICT....	153	6,780	227	5,371,915	92	3,927	197	2,777,469
Clinton.....	3	234	196	255,095	.....	.....	.....	.....
Franklin.....	1	3	90	120	1	3	90	120
Gallatin.....	5	61	168	17,457	4	16	155	3,227
Hamilton.....	1	9	40	244	1	9	40	244
Jackson.....	17	1,090	235	926,242	13	1,019	214	878,590
Jefferson.....	1	2	40	90	1	2	40	90
Marion.....	6	516	233	480,529	4	376	222	258,835
Perry.....	18	1,292	203	860,151	16	1,145	200	776,153
Randolph.....	14	394	220	171,055	6	134	173	48,125
Saline.....	7	133	189	36,436	6	114	132	32,036
St. Clair.....	64	2,203	243	2,133,870	27	581	230	362,103
Washington.....	3	117	247	72,200	1	6	240	1,600
Williamson.....	13	526	200	418,426	12	522	178	415,026

Payment of wages—weekly, semi-monthly or monthly at all coal mines in the State—Continued.

DISTRICTS.	WAGES PAID SEMI-MONTHLY.				WAGES PAID MONTHLY.			
	Number of mines.	Number of men.	Average number of days.	Total tons mined.	Number of mines.	Number of men.	Average number of days.	Total tons mined.
THE STATE.....	194	19,781	221	10,043,875	62	5,820	220	4,667,754
FIRST DISTRICT....	31	5,997	223	2,304,436	13	2,185	201	821,709
Grundy.....	8	2,198	222	731,190	5	1,047	200	322,806
Kankakee.....	1	276	180	85,700	.....	.....	.....	.....
La Salle.....	14	2,421	225	1,012,061	5	838	214	386,442
Livingston.....	6	821	234	394,060	3	300	182	112,461
Will.....	2	281	200	81,425	.....	.....	.....	.....
SECOND DISTRICT..	31	3,784	223	1,460,045	4	515	270	251,978
Bureau.....	18	2,990	220	1,143,270	.....	.....	.....	.....
Hancock.....	.....	.....	.....	.....	.....	.....	.....	.....
Henry.....	5	209	235	92,364	1	49	275	24,209
Knox.....	.....	.....	.....	.....	1	21	300	7,154
Marshall.....	2	258	263	88,388	.....	.....	.....	.....
McDonough.....	.....	.....	.....	.....	.....	.....	.....	.....
Mercer.....	3	202	192	127,451	2	445	256	220,615
Rock Island.....	1	15	250	4,832	.....	.....	.....	.....
Schuyler.....	2	20	210	3,740	.....	.....	.....	.....
Stark.....	.....	.....	.....	.....	.....	.....	.....	.....
Warren.....	.....	.....	.....	.....	.....	.....	.....	.....
THIRD DISTRICT...	66	4,500	195	2,331,523	.....	.....	.....	.....
Cass.....	.....	.....	.....	.....	.....	.....	.....	.....
Fulton.....	16	1,137	198	602,099	.....	.....	.....	.....
Logan.....	1	130	285	93,199	.....	.....	.....	.....
McLean.....	.....	.....	.....	.....	.....	.....	.....	.....
Menard.....	4	347	209	176,475	.....	.....	.....	.....
Peoria.....	34	1,188	182	550,744	.....	.....	.....	.....
Tazewell.....	2	133	233	72,487	.....	.....	.....	.....
Vermilion.....	7	1,122	203	656,388	.....	.....	.....	.....
Woodford.....	2	443	252	180,131	.....	.....	.....	.....
FOURTH DISTRICT†	34	.....	238	2,726,520	16	1,960	220	2,220,972
Bond.....	1	104	236	78,600	.....	.....	.....	.....
Calhoun.....	.....	.....	.....	.....	.....	.....	.....	.....
Christian.....	3	866	202	594,076	.....	.....	.....	.....
Greene.....	.....	.....	.....	.....	.....	.....	.....	.....
Jersey.....	.....	.....	.....	.....	.....	.....	.....	.....
Macon.....	.....	.....	.....	.....	.....	.....	.....	.....
Macoupin.....	6	559	238	463,556	7	1,215	266	1,518,078
Madison.....	4	470	209	416,490	6	455	198	500,177
Montgomery.....	1	60	286	20,320	1	74	185	39,600
Morgan.....	.....	.....	.....	.....	.....	.....	.....	.....
Sangamon.....	17	1,655	246	1,126,978	2	226	246	163,117
Scott.....	1	48	275	21,500	.....	.....	.....	.....
Shelby.....	1	45	60	5,000	.....	.....	.....	.....

* Seven mines, 17 men and 2,460 tons omitted.

† Nine mines, 16 men and 520 tons omitted.

Payment of wages—weekly, semi-monthly or monthly of all coal mines in the State—Concluded.

DISTRICTS.	WAGES PAID SEMI-MONTHLY.				WAGES PAID MONTHLY.			
	Number of mines.	Number of men.	Average number of days.	Total tons mined.	Number of mines.	Number of men.	Average number of days.	Total tons mined.
FIFTH DISTRICT ...	32	1,693	250	.....	29	1,160	221	1,373,095
Clinton	1	77	204	85,730	2	157	192	169,365
Franklin .....	.....	.....	.....	.....	1	45	220	14,230
Gallatin .....	.....	.....	.....	.....	.....	.....	.....	.....
Hamilton	3	67	214	46,852	1	4	50	400
Jackson .....	.....	.....	.....	.....	.....	.....	.....	.....
Jefferson	2	340	254	220,674	.....	.....	.....	.....
Marion	2	147	224	84,098	.....	.....	.....	.....
Perry	2	109	273	62,495	6	151	194	60,435
Randolph	1	19	175	4,400	.....	.....	.....	.....
Saline	20	878	262	670,502	17	744	210	1,101,265
St. Clair	1	56	250	46,600	1	55	250	24,000
Washington .....	.....	.....	.....	.....	1	4	250	3,400
Williamson .....	.....	.....	.....	.....	.....	.....	.....	.....

(No classification is here made as to the proprietorship of the mines, whether operated by companies, firms or individuals; yet it is apparent, considering the comparatively large number of mines and the small number of men and tons where wages are reported as being paid weekly, that these are largely of individual ownership, while those paying wages semi-monthly and monthly are the companies and firms operating larger plants. Following is the number of mines, with averages and percentages:

PAYMENT OF WAGES.	MINES.		EMPLOYÉS.		Average days running time.	OUTPUT—TONS.	
	Number	Percent. of whole number.	Average to each mine.	Percent. of total number.		Average tons to each mine.	Percent. of total output.
Weekly	516	66.9	19	27.6	175	10,145	26.2
Semi-monthly	194	25.1	102	56	221	51,773	50.4
Monthly	62	8	94	16.4	220	75,270	23.4

Here it is shown that at 516 mines, or 66.9 per cent. of the whole wages are paid weekly; at 194, or 25.1 per cent. semi-monthly, and at 62, or 8 per cent, monthly. However, it is found that only 27.6 per cent. of the whole number of employés receive their wages weekly, 56 per cent. semi-monthly, and 16.4 per cent monthly. It is also shown that this small proportion of men who are paid weekly, not only have the smaller average

days of running time of the mines, but produce only 26.2 per cent. of the output; while the employés who are paid semi-monthly and monthly constitute 72.4 per cent. of the whole, and mine and handle 73.8 per cent. of the total product. The great majority of wage earners in all departments of labor, and especially miners, appreciate the advantages obtainable by regular and frequent, at least weekly, receipt of wages, and the information gathered and set forth in the foregoing statements will form a basis for future comparisons of the payment of wages, and may possibly lead to a reform in this regard.)

CONSUMPTION OF POWDER IN MINES.

The statistics of powder used during the year in the process of mining coal in hand mines, show a larger increase in the number of kegs used than in any previous year. The following table gives the record for the year by districts, also in totals for the State for a series of six years:

Kegs of powder used in hand mines.

DISTRICTS.	Number of mines.	Number of men.	Number of kegs of powder.	Number of tons of coal produced.	Number of kegs per man.	Number of tons per keg.	YEAR 1892.		YEAR 1891.	
							No. kegs per man.	No. tons per keg.	No. kegs per man.	No. tons per keg.
First	17	2,502	9,990	1,127,425	4	112.9	4.3	96.6	4.4	102.3
Second.....	36	1,083	15,223	474,877	14.1	31.2	9.6	42.8	13	35.6
Third	131	5,611	98,900	2,804,865	17.6	28.4	16.7	31	16.9	32
Fourth	23	3,814	70,807	2,563,236	18.6	36.2	16.3	42.1	18.5	43.3
Fifth	98	4,722	96,788	3,637,444	20.5	37.6	17.8	36.5	20.5	38.2
<hr/>										
THE STATE.										
1893	310	17,732	291,708	10,607,847	16	36.4	.....	.....	.....	.....
1892	320	17,635	250,327	9,881,659	14.2	39.5	.....	.....	.....	.....
1891	424	14,285	224,226	9,026,083	15.7	40.2	.....	.....	.....	.....
1890	436	13,240	201,285	7,315,157	15.2	36.4	.....	.....	.....	.....
1889	461	10,999	169,332	6,051,149	15.4	35.7	.....	.....	.....	.....
1888	415	10,205	159,908	5,972,796	15.7	37.4	.....	.....	.....	.....

This record is for powder used in hand-mining only, and by the method known as pillar-and-room workings. For the year, 310 mines are reported having 17,732 employés, consuming 291,708 kegs of powder, 25 pounds each, and producing 10,607,847 tons of coal; apportioned it gives an average of 16 kegs to each man, and a yield of 36.4 tons per keg. It will be observed

that the number of hand mines in which this explosive power is used has decreased 105, or 34 per cent. in the past six years, while, on the other hand, during the same time the number of employés has increased 7,527, or 73.8 per cent. the number of tons mined 4,635,051, or 77.6 per cent. and the number of kegs of powder used 131,800, or 82.4 per cent. Hence showing that while the number of mines in which this explosive power has been employed has decreased 34 per cent. the increase in the quantity consumed has been 8.6 per cent more than the increase in employés, and 4.8 per cent. more than the increase of tons mined. The record for the year, compared with last year, shows an increase of 1.8 kegs per man and a decrease of 3.1 tons per keg.

In making the computations as to the number of kegs of powder used per man, in this as well as in former reports, the total number of men working in and about the mines has been used as a basis for such estimates. It is deemed, however, that in order to arrive at a closer, and perhaps a more equitable estimate of the number of kegs used and the cost of the same per man, that only the number of miners proper, or, the men working under ground should be used in making this calculation.

On this basis it is found that of the 17,732 men reported as working at these mines, only 13,122 were working under ground; using this number it is found that the consumption is 22.23 kegs per man per year, instead of 16 kegs per man, as given in the table, which at the average rate of \$1.983 per keg, makes an annual cost of \$44.08 to each man.

The variations in the quantity of powder consumed and its utility in hand-mining is shown in detail in the following table:

Consumption of powder in hand mines, 1893.

STATE, DISTRICTS AND COUNTIES.	Num- ber of mines.	Number of miners em- ployed.	Number of tons mined.	Number of kegs of powder used.	Average price per keg.	Number of kegs per man.	Number of tons per keg.
THE STATE	310	17,732	10,607,847	291,708	\$1 983	16	36.4
FIRST DISTRICT	17	2,502	1,127,425	9,990	\$2 055	4	112.9
LaSalle	7	1,332	592,896	3,265	\$2 00	2.5	181.6
Livingston	10	1,170	534,529	6,725	2 084	5.7	78
SECOND DISTRICT	36	1,083	474,877	15,223	\$1 925	14.1	31.2
Bureau	3	89	30,101	337	\$2 00	3.8	89
Henry	2	61	26,817	495	2 00	8.1	54.2
Mercer	9	682	357,706	12,349	1 925	18.1	29
Rock Island	10	124	30,308	1,004	1 69	8.1	30.2
Schuyler	3	56	14,555	560	2 232	10.0	25.8
Stark	7	58	12,470	348	1 937	6.0	35.8
Warren	2	13	2,920	120	2 00	9.2	24.3
THIRD DISTRICT	131	5,611	2,804,865	98,900	\$2 00	17.6	28.4
Cass	2	39	19,280	920	\$2 00	23.6	20.9
Fulton	29	1,451	742,332	24,578	2 00	16.9	30.2
Logan	3	298	189,319	7,170	.....	24.1	26.4
McLean	1	63	38,400	1,240	.....	19.7	30.9
Menard	7	414	198,091	6,698	.....	16.2	28.1
Peoria	42	1,282	594,174	28,159	2 00	21.2	21.1
Tazewell	10	299	128,957	5,498	2 00	18.4	23.5
Vermilion	37	1,765	894,312	24,637	.....	14.0	36.3
FOURTH DISTRICT	28	3,814	2,563,236	70,807	\$2 196	18.6	36.2
Calhoun	1	16	4,584	210	\$2 00	13.1	21.8
Christian	3	866	594,076	3,477	.....	4	170.9
Macon	1	111	70,378	3,215	2 25	29	21.9
Macoupin	5	379	235,583	6,788	2 25	17.9	34.7
Madison	4	207	155,456	3,616	.....	17.5	43
Montgomery	2	216	155,392	2,737	2 00	12.7	56.8
Sangamon	20	1,926	1,321,267	49,802	.....	25.9	26.5
Scott	1	48	21,500	712	.....	14.8	30.2
Shelby	1	45	5,000	250	.....	5.6	20
FIFTH DISTRICT	98	4,722	3,637,444	96,788	\$1 936	20.5	37.6
Clinton	2	127	174,026	4,898	\$1 75	38.6	35.5
Gallatin	3	53	16,457	915	1 80	17.3	18
Jackson	7	225	141,597	3,099	1 75	13.8	45.7
Marion	4	641	445,529	12,465	2 25	19.4	35.7
Perry	15	1,229	831,501	17,240	2 25	14	48.2
Randolph	11	382	169,390	6,463	2 25	16.9	26.2
Saline	3	101	34,697	1,071	2 25	10.6	32.4
St. Clair	43	1,486	1,448,787	40,150	1 75	27	36.1
Washington	3	117	72,200	2,540	2 25	21.7	28.4
Williamson	7	361	303,260	7,447	1 75	20.6	40.7

Here is presented an account made of the 291,708 kegs of powder used in mines where coal is brought out by hand-mining; and for all of which the miners have paid out of their hard earned wages. The prices paid by miners for powder varies somewhat in different parts of the State. Statistics as to prices of powder have been gathered from the mines in 27 of the 36

counties represented in the foregoing table where powder has been used, and an average for the State is found of \$1,983 per keg, or a cost to the miner of about 5.3 cents for each ton of coal mined.

POWDER IN MACHINE MINES.

The following table gives the totals for six years of mines in which machines are used exclusively:

Powder in machine mines.

YEARS.	Number of mines.	Number of ma- chines.	Number of men.	Number of tons of coal produced.	Number of kegs of powder used during the year.	Number of tons pro- duced per keg.	Number of tons pro- duced per ma- chine.
1893.....	37	288	4,091	4,375,626	49,707	88	15,193
1892.....	34	270	3,439	3,664,590	38,447	95.3	13,573
1891.....	27	211	2,789	2,798,207	28,525	98.1	13,262
1890.....	25	207	2,733	2,654,150	32,454	81.7	12,822
1889.....	24	162	2,763	1,956,383	19,109	102.4	12,051
1888.....	25	209	2,552	1,916,091	19,725	97.14	9,168

In these mines powder is furnished by the companies. This year there are 37 mines, using 288 machines, employing 4,091 men, consuming 49,707 kegs of powder, and producing 4,375,626 tons of coal.

Following is a table of these mines arranged by counties, all located in the Fourth and Fifth districts:

Consumption of powder at machine mines—1893.

DISTRICTS AND COUNTIES.	COMPANY.	Name or No. of Mine.	No. of mines.	No. of ma- chines.	No. of em- ployés.	No. tons of coal pro- duced.	No. kegs of powder used during year.	No. tons pro- duced per
The State.....			37	238	4,091	4,375,626	49,707	88
Fourth District			18	187	2,531	2,914,902	30,816	94.6
Bond	Sorento Coal Co.....	Sorento.....	1	6	104	78,600	1,851	42.5
Christian	Taylorville Coal Co	Nos. 1 & 2.....	1	11	146	195,263	1,400	139.5
	Edinburg Coal Co.....	Edinburg.....	1	5	52	31,881	463	60.9
Macoupin	Consolidated Coal Co.....	No. 6.....	1	23	256	302,449	2,486	121.7
	Consolidated Coal Co.....	No. 7.....	1	16	167	215,816	1,990	108.5
	Consolidated Coal Co.....	No. 8.....	1	18	206	304,939	2,032	150.1
	Consolidated Coal Co.....	No. 10.....	1	14	197	290,509	1,912	151.9
	Consolidated Coal Co.....	Gillespie.....	1	11	134	121,639	1,148	106.0
	Consolidated Coal Co.....	St. Bernard....	1	8	106	93,135	880	105.8
	Mt. Olive Coal Co.....	Mt. Olive.....	1	12	170	227,973	1,593	143.1
	Girard Coal Co.....	Girard.....	1	12	149	189,591	1,721	110.2
Madison	Consolidated Coal Co.....	Abbey N. 3....	1	6	130	184,729	1,597	115.7
	Consolidated Coal Co.....	Helntz Bluff..	1	10	141	184,077	1,493	130.0
	Consolidated Coal Co.....	Troy.....	1	7	94	75,822	586	126.0
	Madison Coal Co.....	No. 1.....	1	8	110	92,239	2,100	43.9
	Madison Coal Co.....	No. 2.....	1	8	202	184,032	4,000	46.0
	Madison Coal Co.....	No. 3.....	1	6	68	55,069	700	78.7
Sangamon....	Wilmingt'n & Sp'gfd C. Co	Ridgely.....	1	6	99	89,079	2,864	31.1
Fifth District...			19	101	1,560	1,460,724	18,891	77.3
Clinton	Consolidated Coal Co.....	Trenton.....	1	9	107	81,069	519	156.2
Jackson.....	St. Louis Ore & Steel Co...	Murphysboro	1	9	170	154,713	1,779	87.0
	St. Louis Ore & Steel Co...	No. 5.....	1	10	226	209,890	2,679	78.3
	St. Louis Ore & Steel Co...	Harrison.....	1	7	95	63,640	751	84.7
	Gartside Coal Co.....	No. 1.....	1	2	21	29,133	300	97.1
	Gartside Coal Co.....	No. 3.....	1	7	45	57,220	600	95.4
	Gartside Coal Co.....	No. 4.....	1	7	62	73,064	700	104.4
Perry	Egyptian Coal Co.....	DuQuoin.....	1	3	47	27,000	1,066	25.3
St. Clair	Consolidated Coal Co.....	Schureman....	1	4	44	68,284	498	137.1
	Consolidated Coal Co.....	Gartside.....	1	5	60	65,484	523	125.2
	Consolidated Coal Co.....	Knecht.....	1	4	55	83,899	571	129.4
	Consolidated Coal Co.....	Abbey No. 4....	1	6	106	136,376	2,325	58.6
	Consolidated Coal Co.....	Green Mount..	1	3	26	71,130	1,107	64.3
	Consolidated Coal Co.....	Rose Hill.....	1	2	26	21,331	149	143.1
	Maule Coal Co.....	Main.....	1	4	170	63,000	1,560	40.4
	Glendale Coal Co.....	Belleville.....	1	4	68	63,800	750	85.1
	Oakland Coal Co.....	Belleville.....	1	3	26	36,859	253	145.6
	Lebanon Coal & Mach. Asso	Lebanon.....	1	7	70	43,676	700	62.4
Williamson...	Crystal Plate Glass Co....	Fredonia.....	1	5	136	111,156	2,061	53.9

It will be noticed that much greater efficiency is derived from the use of powder in these mines than is reached in hand mines. The result is an average of 88 tons per keg, and only 12.1 kegs per man; while in hand mines the average is 36.4 tons per keg, and 16 kegs per man.

The following comparative table gives both classes with their respective averages:

Consumption of powder in hand and machine mines—1893.

KIND OF MINING.	Number of mines.	Number of men.	Number of kegs of powder used.	Number of tons of coal produced.	Number of kegs per man.	Number of tons per keg.
Hand mines.....	310	17,732	291,708	10,607,847	16	36.4
Machine mines.....	37	4,091	49,707	4,375,626	12.1	88
Total.....	347	21,723	341,415	14,983,473	15.7	43.9

CASUALTIES IN MINES.

The miner in the performance of his daily labor is perhaps more exposed to unforeseen and improbable dangers than workmen in any other trade or occupation. When he enters upon his day's work he goes, in most instances, several hundred feet under ground; there his working place is narrow, within a confined space, in dense darkness, save the feeble light of his lamp, his surroundings at all times extra hazardous; thus situated he prosecutes his work encompassed on all sides by numerous and varied perils, lurking in imperceptible places, and without apparent possibility of escape.

(During the past year there have been 69 killed, 65 underground and 4 on the surface; this is one to every 513 men employed; last year the record was one to every 590, the year before one to every 549. It has been previously noted that the number of men killed during the past year exceeded that of any previous year, excepting the year 1883, when 69 men perished by the flooding of a mine at Braidwood, and 10 were killed by an explosion at Coulterville.) The following table gives the number killed, total number of employes and tons of coal by districts:

Total fatal accidents by Districts—1893.

DISTRICTS.	Num- ber killed.	Number of em- ployes.	Number of tons of coal mined—all grades.	Number of em- ployes to each death.	Number of tons of all grades to each death.
First.....	17	8,831	3,394,686	520	199,682
Second.....	5	5,794	2,000,664	1,159	400,133
Third.....	12	6,964	3,397,433	580	283,120
Fourth.....	10	7,021	5,784,866	702	238,358
Fifth.....	25	6,750	5,371,915	271	214,877
The State	69	35,390	19,949,564	513	289,124

Uniform statistics for eleven years are presented in the following table:

Fatal Accidents for 11 Years.

Years.	Number killed.	Number of employés.	Number of tons of lump coal mined.	Number of employés to each life lost.	Number of tons of lump coal produced to each life lost.
1883	134	23,939	10,030,991	179.6	74,858
1884	46	25,575	10,101,005	556	219,587
1885	39	25,446	9,791,874	652	261,074
1886	52	25,846	9,246,435	497	177,816
1887	41	26,804	10,278,800	654	244,735
1888	55	29,410	11,855,188	534.7	215,549
1889	42	30,076	11,597,963	716	276,142
1890	53	28,574	12,638,364	539	238,459
1891	60	32,951	15,660,698	549	261,012
1892	57	33,632	17,862,276	590	313,372
1893	69	35,390	19,949,564	513	289,124
Averages	59	28,877	\bar{x} { *10,692,589 †17,824,179	490	{ *185,153 †287,487

*Eight years including the year 1890.

†Three years since 1890.

The foregoing gives a complete account of the fatal casualties for eleven years and the proportion they bear to the number of men employed and tons produced. Heretofore, in these reports, all comparisons as to accidents and tonnage have been based on the total number of tons of lump coal. For the past three years the total tons, all grades of coal, have been procured; therefore, for these years the total tons mined are taken into account as the proper basis for these comparisons.

Reviewing the fatal casualties of the State for the past ten years, it is found that the average for each year is 51 killed, being one to every 571 employés in and about the mines.

The following statistics for three years are presented of the death rate, and proportion of men employed in coal mines of some other states, and in the mines of Great Britain, also on the railroads of this State and the United States:

Comparative table of the ratio of men killed to the total number employed.

STATES, RAILROADS, ETC.	Year 1891.	Year 1892.	Year 1893.
Illinois.....	1 to 549	1 to 590	1 to 513
Pennsylvania ... { Anthracite.....	1 to 288	1 to 327	No report
{ Bituminous	1 to 312	1 to 588	No report
Ohio	1 to 479	1 to 529	No report
West Virginia.....	1 to 391	1 to 439	No report
Iowa.....	No report	1 to 378	1 to 338
Missouri.....	No report	1 to 586	No report
Kentucky	1 to 543	1 to 825	No report
Kansas	1 to 688	No report	No report
Great Britain	1 to 663	1 to 676	No report
Railroads—Illinois.....	1 to 312	1 to 3/5	1 to 292
Railroads—United States.....	No report	1 to 322	No report

Here it is shown that the experience in regard to fatal accidents in the coal mines of this State compares very favorably with that of other states and with Great Britain, and shows a better record than many of the other states, and a much better record than the railroads of this State or of the United States.

The number of individual accidents that have befallen the men employed in and about the mines of the State during the past year is 403, or one to every 88 employes, and one for every 49,503 tons of coal mined; the accidents reported by the inspectors are those which have caused lost time to the workman of a week or more. The following table gives the record for the year by districts:

Non-fatal Accidents by Districts—1893

DISTRICTS.	Number of men injured.	Number of employes.	Number of tons of coal mined—all grades.	Number of employes to each injury.	Number of tons of all grades to one man injured.
First	146	8,831	3,394,686	61	23,251
Second.....	72	5,794	2,000,664	80	27,787
Third.....	51	6,964	3,397,433	137	66,616
Fourth.....	67	7,021	5,784,866	105	86,341
Fifth	67	6,780	5,371,915	101	80,178
The State	403	35,390	19,949,564	88	49,503

The First, Second and Third districts show a large increase in this class of accidents. Since 1890 the increase in the First district has been 94.6 per cent., in the Second 84.6 per cent., and in the Third 45.7 per cent.; in the Fourth and Fifth districts a slight decrease is shown. A comparative table is presented for the past eleven years:

Non-fatal Accidents for 11 years.

YEARS.	Number of men injured.	Total number of employés.	Total number of tons of lump coal mined.	Number of employés to one man injured.	Number of tons of coal produced to one man injured.
1883.....	231	23,939	10,030,991	103.6	43,424
1884.....	197	25,575	10,101,005	129.8	51,274
1885.....	176	25,446	9,791,874	144.6	55,634
1886.....	171	25,846	9,246,435	151	54,713
1887.....	180	26,804	10,278,890	149	57,105
1888.....	179	29,410	11,855,188	164.3	66,241
1889.....	201	30,076	11,597,963	149.6	57,701
1890.....	294	28,574	12,638,364	97.2	42,987
1891.....	367	32,951	15,660,698	89.8	35,314
1892.....	370	33,632	17,862,276	91	39,813
1893.....	403	35,390	19,949,564	88	39,300
Eleven years.....	2,769	317,643	*10,692,589 †17,824,179	.....	.....
Averages.....	252	28,877	11,758,618	114.7	46,594

* Eight years, including the year 1890.

† Three years, since 1890.

A large increase in the number of these accidents is noticeable in the last four years, it being 37 per cent; the increase in the eleven years is 74.4 per cent.; during this time the number employed has increased 38.3 per cent., while the increase in tons mined has been about 60 per cent.

The record of accidents of all kinds for eleven years, compared with the number of men employed and tons mined, is presented in the following table:

Fatal and Non-fatal Accidents—11 years—1883—1893.

YEARS.	Number killed.	Number injured.	Total number of men employed.	Total number of tons of lump coal produced.	FATAL CASUALTIES.		NON-FATAL CASUALTIES.	
					Number of employés to each life lost.	Number of tons of coal produced to each life lost.	Number of employés to each man injured.	Number of tons of coal produced to each man injured.
1883.....	134	231	23,939	10,030,991	179.6	74,858	103.6	43,424
1884.....	46	197	25,575	10,101,005	556	219,587	129.8	51,274
1885.....	39	176	25,446	9,791,874	652.4	261,074	144.6	55,634
1886.....	52	171	25,846	9,246,435	497	177,816	151	54,713
1887.....	41	180	26,804	10,278,890	654	244,735	149	57,105
1888.....	55	179	29,410	11,855,188	534.7	215,549	164.3	66,241
1889.....	42	201	30,076	11,597,963	716.1	276,142	149.6	57,701
1890.....	53	294	28,574	12,638,364	539.1	238,459	97.2	42,987
1891.....	60	367	32,951	15,660,698	549	261,012	89.8	42,672
1892.....	57	370	33,632	17,862,276	590	313,372	91	48,276
1893.....	69	403	35,390	19,949,564	513	289,124	88	49,503
Totals	648	2,769	317,643	.....	.....	.....	.....	.....
Averages..	59	252	28,877	{*10,692,589 †17,824,179	490	*185,153 †287,487	114.7	*52,575 †46,906

* Eight years, including the year 1890.

† Three years, since 1890.

This year shows one life lost to every 289,124 tons produced, and an average for three years of 287,487 tons each. Another comparative table is here presented giving the number of tons mined to each man killed, with statistics compiled from reports of different states and of Great Britain:

Comparative table giving the number of tons mined to each life lost.

STATES.	Year 1891.	Year 1892.	Year 1893.
Illinois	1 to 261,012	1 to 313,372	1 to 289,124
Pennsylvania—			
Anthracite	1 to 103,553	1 to 109,422	No report
Bituminous	1 to 151,653	1 to 347,586	No report
Ohio	1 to 296,595	1 to 346,426	No report
West Virginia.....	1 to 202,262	1 to 222,216	No report
Iowa	No report	1 to 183,976	1 to 148,867
Missouri.....	No report	1 to 150,864	No report
Kentucky.....	1 to 184,321	1 to 263,619	No report
Kansas	1 to 189,129	No report	No report
Great Britain	1 to 189,457	1 to 185,119	No report

From the foregoing it is to be observed that notwithstanding the large increase of fatal accidents at the mines of the State during the past year the proportion, compared as to tons of coal mined, is much more favorable than in many other states and in Great Britain. However, this showing should not, by any construction, be used to justify any inactivity, care or watchfulness on the part of those in authority in and about the coal mines, or of the men engaged in work, but, on the other hand, a redoubled effort should be exerted by all managers and others for a strict observance of all rules and regulations that may tend to reduce these fatal casualties.)

The following is a list of the operators of the mines at which occurred the 69 fatal casualties reported for the year, giving the number of mines operated, men employed and tons of coal produced:

Fatal Accidents, Number of Mines, Men, Tons and Ratios.

NAME OF COMPANY, FIRM OR PERSON OPERATING MINE.	Number of men killed.	Number of mines operat'd.	Number of men employed.	Total num- ber of tons of coal produced at the mines.	Number of men employed to one man killed.	Number of tons of coal pro- duced to one man killed.
Athens Coal Co	1	1	125	83,154	125	83,154
Becker, Charles.....	1	1	20	18,500	20	18,500
Big Four Coal Co.....	2	1	175	73,948	86	36,974
Briar Bluff Coal Co.....	1	1	49	24,209	49	24,209
Brown, G. W.....	1	1	45	23,900	45	23,900
Bryden Coal Co.....	2	1	37	20,469	19	10,234
Chi, Wil. and Ver. Coal Co.	1	1	530	280,090	530	280,090
Clear Lake Coal Co.....	1	1	61	50,883	61	50,883
Coal Valley Coal Co.....	1	1	413	198,833	413	198,833
Colfax Coal Co.....	1	1	63	38,400	63	38,400
Consolidated Coal Co.....	8	6	724	850,894	91	106,362
Consumers' Coal Co.....	2	1	70	55,483	35	27,742
Dickson & Frazier.....	1	1	126	55,718	126	55,718
Excelsior Coal Co.....	2	1	70	100,000	35	50,000
Gaitside Coal Co.....	1	1	21	29,133	21	29,133
Highland Coal Co.....	1	1	40	27,249	40	27,249
Hodgett Bros.....	1	1	14	4,446	14	4,446
Horn Coal Co.....	1	1	180	96,775	180	96,775
Jupiter Coal Co.....	2	1	154	100,599	77	50,299
Kelleyville Coal Co.....	2	1	464	295,444	232	147,722
Kuhn & Schwind.....	1	1	55	24,000	55	24,000
Lebanon Coal Co.....	1	1	70	43,676	70	43,676
Lenzburg Coal Co.....	1	1	11	9,390	11	9,390
Lincoln Coal Co.....	1	1	130	93,199	130	93,199
McClairry, S. C.....	1	1	5	2,300	5	2,300
McLean Coal Co.....	1	1	340	154,627	340	154,627
Madison Coal Co.....	2	2	270	239,101	135	119,551
Maplewood Coal Co.....	1	1	103	66,498	103	66,498
Muncie Coal Co.....	1	1	15	1,200	15	1,200
Oakland Coal Co.....	1	1	26	36,859	26	36,859
Odin Coal Co.....	2	1	170	94,000	85	47,000
Oglesby Coal Co.....	1	1	226	97,547	226	97,547
Pana Coal Co.....	2	1	370	246,118	185	123,059
Pawnee Coal Co.....	1	1	155	107,945	155	107,945
Perry Coal Co.....	1	1	62	26,851	62	26,851
Pleasant Hill Coal Co.....	1	1	112	40,954	112	40,954
Plumb, Nelson.....	1	1	200	78,485	200	78,485
Ryan, P.....	3	1	12	2,340	4	780
Simkins, Samuel.....	1	1	108	35,000	108	35,000
Springside Coal Co.....	1	1	215	125,519	215	125,519
Spring Valley Coal Co.....	2	2	1,131	480,978	566	240,489
Star Coal Co.....	5	4	1,499	595,445	300	119,089
Vicary Bros.....	2	1	24	11,875	12	5,937
Woodside Coal Co.....	1	1	180	102,100	180	102,100
Zinc Coal Co.....	1	1	78	77,448	78	77,448
Totals and averages, { 1893	69	55	8,948	5,221,582	130	75,672
{ 1892	57	80	13,919	8,047,920	244	141,192
{ 1891	60	86	13,298	7,086,723	222	118,112
The State, 1893.....	69	788	35,390	19,949,564	513	289,124

This table shows that the 69 fatal casualties happened at 55 mines operated by 45 companies; these mines are only 7 per cent. of the whole number, employing 25 per cent. of all the men, and produced but 26 per cent. of the total product. The percentages are very much lower than last year and the year before; eleven of the companies in this list report 25 men killed, the same companies reported 29 last year and 28 the year before.

The 69 fatal accidents reported have made 32 widows and 106 fatherless children. The following table for a series of eight years presents the record in detail:

Fatal Accidents, widows and orphans, for 8 years.

YEARS.	Deaths.	Married.	Single.	Widows.	Fatherless children.	No. of years.	AVERAGES, BY YEARS.				
							Deaths.	Married.	Single.	Widows.	Fatherless children.
1886	52	30	22	30	76	...	...	...	...	...	...
1887	41	24	17	22	77	2	46.5	27	19.5	26	76.5
1888	55	28	27	28	89	3	49.3	27.3	22	26.7	80.6
1889	42	24	18	20	75	4	47.5	26.5	21	25	79.2
1890	53	33	20	33	75	5	48.6	27.8	21	26.6	78.4
1891	60	39	21	37	112	6	50.5	29.7	21	28.3	84
1892	57	24	33	24	63	7	51.4	27	22.6	27.9	81
1893	69	34	35	32	106	8	53.6	29.5	24.1	28.2	84.1
Totals ...	429	236	193	226	673	...	...	...	...	...	...

The number of widows and children this year shows an increase of 51, or 58.6 per cent. more than last year, and makes an average of 112 for each of the last 8 years. (Classifying the causes of the accidents of the year, resulting in death, furnishes the following table:

Fatal Accidents—By Causes.

CAUSES.	Totals.	First District.	Second District.	Third District.	Fourth District.	Fifth District.	Per-centages
Blast discharge	6	.....	.....	1	2	3	8.7
Cages	4	.....	.....	2	.....	2	5.8
Explosion fire-damp	1	.....	.....	1	.....	.....	1.5
Falling coal and rock	48	15	3	8	6	16	69.6
Falling down shaft	3	1	1	.....	1	.....	4.3
Falling off bridge	1	.....	1	.....	.....	.....	1.5
Flying coal	1	.....	.....	.....	.....	1	1.4
Gas-suffocation	2	.....	.....	.....	.....	2	2.9
Fi-cars	2	.....	.....	.....	1	1	2.9
Railroad cars	1	1	.....	.....	.....	.....	1.4
Totals.....	69	17	5	12	10	25	100.00

It is found that the nature of the accidents by which the 69 men lost their lives does not differ materially from the reports of former years. The most noticeable feature is the large proportion of deaths from falling rock or coal, and indicates quite forcibly that herein lies the cause to which may be attributed the large increase in the death rate for this and preceding years.

Statistics regarding fatal accidents caused by falling rock and coal have been obtained from published reports of the mine inspectors of several other states, and from Great Britain, and are presented in the following tabulated form:

Percentages of Fatal Accidents caused by falling rock and coal.

STATES, ETC.	Year 1891.	Year 1892.	Year 1893.
Illinois	55	49.1	69.6
Pennsylvania { Anthracite.....	39 72	45.69	†
{ Bituminous	31.98	70.89	†
Ohio	75	57	†
West Virginia.....	58.33	74.29	†
Iowa.....	†	77.27	38.7
Missouri.....	†	85	†
Kansas	53.85	†	†
Great Britain	48.62	44.30	†

† No report.

The facts here brought out are that the leading cause of fatal accidents in coal mines of this country is the falling roof and sides at the working places of the men.

In the English mines, while the percentages given for two years are less than in the bituminous mines of this country, this cause is nevertheless reported as the leading one there as here. Taking the expressed judgment of inspectors and managers of coal mines of this and other states, the opinion is quite general that the number of accidents from falling roof and sides could be averted by the exercise of a more vigilant and precautionary care on the part of the men themselves, and at the same time, a more strict enforcement of discipline by those in charge of the work. The following table gives the fatal accidents from leading causes for the last six years:

Fatal Accidents for 6 years by leading causes.

CAUSES.	Totals.	Year 1888.	Year 1889.	Year 1890.	Year 1891.	Year 1892.	Year 1893.	Percentage.
Blasts and explosions.	37	9	3	4	11	4	6	11
Cages	22	2	4	4	4	4	4	6.5
Coal and other things falling down shaft	4	1	.....	.....	2	1	.....	1.2
Falling down shaft.....	18	4	2	.....	1	8	3	5.4
Falling props, etc.....	7	1	.....	.....	1	3	2	2.1
Falling coal and rock	204	33	26	36	33	28	48	60.7
Fire-damp and gas	14	.....	5	4	2	3	.....	4.1
Pit-cars	24	6	5	3	2	6	2	7.2
Railroad cars.....	6	1	.....	1	2	1	1	1.8
Totals	336	55	42	53	60	57	69	100.00

In this condensed table is found the principal origin of the dangers that constantly surround the miner while at work. The fatalities from falling roof and sides each year equal or exceed those of all other causes combined, and certainly demands the attention and endeavor of every person connected with coal mining to reduce the alarming death rate from this cause.

The following table is presented giving the total number of accidents for eleven years with the percentages caused by falling roof and sides, by districts:

Total number of Fatal Accidents, and the percentages caused by falling roof and sides—for 11 years—by districts and for the State.

YEARS.	FIRST DISTRICT.		SECOND DISTRICT.		THIRD DISTRICT.		FOURTH DISTRICT.		FIFTH DISTRICT.		THE STATE.	
	Total	Per cent.	Total	Per cent.	Total	Per cent.	Total	Per cent.	Total	Per cent.	Total accidents	Per cent killed by falling rock and coal
1883.....	79	8.9	1	100	18	82.4	16	56.2	20	50	134	31.4
1884.....	11	27.3	6	83.3	12	66.7	9	44.4	8	75	46	56.5
1885.....	10	60	3	.....	6	33.3	13	69.2	7	43	39	51.3
1886.....	14	64.3	6	50	11	45.5	9	89	12	58.3	52	61.5
1887.....	14	71.4	5	60	5	60	3	66	14	71.4	41	68.3
1888.....	19	84.2	5	20	10	50	8	62.5	13	46.2	55	60
1889.....	14	57.1	3	33.3	6	50	8	75	11	72.7	42	62
1890.....	16	93.8	5	20	10	80	11	45.5	11	63.6	53	67.9
1891.....	15	66.7	4	50	9	44.4	12	50	20	55	60	55
1892.....	10	80	1	100	11	45.5	24	33.3	11	54.5	57	49.1
1893.....	17	88.2	5	60	12	66.6	10	60	25	64	69	69.6
Totals	219	49	44	47.7	110	59.1	123	55.3	152	60.5	648	54.5

The Third, Fourth and Fifth districts show the largest percentages for the whole number of years, and greater than the percentage of the State; while for single years the First and Second districts show larger percentages than either of the other districts. The following table gives the whole number of fatal accidents by districts, the total number caused by falling roof and sides, and the whole number by other causes:

Total number of Fatal Accidents, and number caused by falling roof and sides, also the total number from all other causes.

YEARS.	FIRST DISTRICT.			SECOND DISTRICT.			THIRD DISTRICT.			FOURTH DISTRICT.			FIFTH DISTRICT.			THE STATE.
	CASUALTY'S			CASUALTY'S			CASUALTY'S			CASUALTY'S			CASUALTY'S			CASUALTY'S
	Total killed.	By falling rock and coal.	By other causes.	Total killed.	By falling rock and coal.	By other causes.	Total killed.	By falling rock and coal.	By other causes.	Total killed.	By falling rock and coal.	By other causes.	Total killed.	By falling rock and coal.	By other causes.	Total killed.
1883.....	79	7	72	1	1	...	18	14	4	16	9	7	20	12	8	134
1884.....	11	3	8	6	5	1	12	8	4	9	4	5	8	6	2	46
1885.....	10	6	4	3	...	3	6	2	4	13	9	4	7	3	4	39
1886.....	14	9	5	5	3	3	11	5	6	9	8	1	12	7	5	52
1887.....	14	10	4	4	3	1	12	5	7	3	3	1	14	10	4	41
1888.....	19	16	3	5	1	4	10	8	2	8	3	5	13	6	7	55
1889.....	14	8	6	3	1	2	6	3	3	8	6	2	11	8	3	42
1890.....	16	15	1	5	1	4	10	8	2	11	5	6	11	7	4	53
1891.....	15	10	5	4	2	2	9	4	5	12	6	6	20	11	9	60
1892.....	10	8	2	1	1	...	11	5	6	24	8	16	11	6	5	57
1893.....	17	15	2	5	3	2	12	8	4	10	6	4	25	16	9	69
Totals	219	107	112	44	21	23	110	65	45	123	68	55	152	92	60	648

Referring to the column for the State, it is found that there have been 648 men killed during the eleven years, or an average of 59 for each year. The number killed during the year by falling rock or coal was 48, or 69.9 per cent. of the whole number of fatal accidents; this is a larger per cent. than for any previous year, and increases the number to 54.5 per cent. of the total fatalities for eleven years. Following is a table showing the occupations of the men killed and their conjugal relations, by districts:

Fatal Casualties—By occupations and conjugal relations.

OCCUPATIONS.	Total number killed.	DISTRICTS AND NUMBER KILLED IN EACH.					CONJUGAL RELATIONS.				
		First.	Second.	Third.	Fourth.	Fifth.	Married.	Single.	Widows.	Children.	Dependents.
Blacksmith.....	1	.....	.....	.....	1	.....	1	.....	1	2	3
Cager.....	1	.....	.....	1	.....	.....	.....	1	.....	.....	.....
Companyman.....	1	.....	1	.....	.....	.....	1	.....	1	4	5
Drivers.....	4	.....	1	.....	1	2	.....	3	1	2	3
Helpers.....	2	1	.....	.....	1	.....	1	1	1	8	9
Laborers.....	2	.....	.....	1	.....	1	1	1	1	3	4
Messenger boy.....	1	1	.....	.....	.....	.....	.....	1	.....	.....	.....
Miners.....	48	13	2	8	4	21	25	23	24	78	102
Roadman.....	1	1	.....	.....	.....	.....	.....	1	.....	.....	.....
Runners.....	2	1	.....	.....	2	.....	1	1	1	3	4
Timberers.....	3	.....	.....	1	1	1	.....	1	2	2	4
Topmen.....	2	1	.....	1	.....	.....	1	1	.....	4	4
Water-bailer.....	1	.....	1	.....	.....	.....	.....	1	.....	.....	.....
Totals.....	69	17	5	12	10	25	34	35	32	106	138

It is found that nearly 70 per cent. of the whole number killed were miners or skilled workmen; one-half were married men and all left dependents, one family consisting of a widow and eight children; the total number of dependents being 138, of whom 106 were children. The average age of the married men was about 38 years, of the single men 28 years.

The number of men who have suffered by accidents so as to lose time has increased 50 per cent. in the past five years; during the past year 403 have sustained such injuries. The following table gives the causes of these accidents, by districts:

Non-Fatal Casualties—By Causes.

CAUSES.	Totals.	First District.	Second District.	Third District.	Fourth District.	Fifth District.	Per-centage.
Air-valve	1	.....	.....	.....	.....	1	.25
Blast explosion	16	.....	.....	7	.....	5	3.97
Cages	8	.....	3	1	2	2	1.98
Coal, dirt, etc., falling down shaft	5	1	1	.....	.....	3	1.24
Compressor	2	.....	.....	.....	.....	2	.5
Falling clod, coal and rock	254	121	41	21	37	34	63.02
Falling timbers in mine..	5	2	.....	1	2	.....	1.24
Falling in mine	6	.....	3	2	.....	1	1.49
Flying coal, etc.	9	2	1	4	.....	2	2.23
Kick by mules	6	.....	2	.....	3	1	1.49
Lifting and loading coal..	2	1	.....	.....	.....	1	.5
Pick in mine	1	.....	1	.....	.....	.....	.25
Pit-cars	81	17	18	13	18	15	20.1
Railroad cars	6	1	2	2	1	.....	1.49
Tail-chain	1	1	.....	.....	.....	.....	.25
Totals.....	403	146	72	51	67	67	100.00

It will be seen that accidents from falling roof and sides for the past year largely predominates, causing 63 per cent. of the injuries reported; the accidents by pit-cars is the next leading cause; for the past four years these two causes have produced 82 per cent. of the non-fatal accidents. The large preponderance of accidents by falling roof and sides in the mines makes a special appeal for stricter rules governing propping and supports, and gives an emphasized warning to the workman as well as the foreman, manager and operator that greater vigilance must be exercised in the under-ground systems of workings.)

The following table gives the total non-fatal accidents for the past eleven years, with the number caused by falling rock and coal and by other causes, by districts, and for the State:

Total number of Non-Fatal Accidents, and the number injured by falling roof and sides and by other causes—11 years—by Districts and for the State.

YEARS.	FIRST DISTRICT.			SECOND DISTRICT.			THIRD DISTRICT.			FOURTH DISTRICT.			FIFTH DISTRICT.			THE STATE.		
	INJURED.			INJURED.			INJURED.			INJURED.			INJURED.			INJURED.		
	Total.	By falling rock and coal.	By other causes.	Total.	By falling rock and coal.	By other causes.	Total.	By falling rock and coal.	By other causes.	Total.	By falling rock and coal.	By other causes.	Total.	By falling rock and coal.	By other causes.	Total.	By falling rock and coal.	By other causes.
1883.....	49	36	13	21	12	9	59	42	17	47	26	21	56	17	39	232	133	99
1884.....	57	41	16	19	14	5	42	29	13	33	24	9	46	27	19	197	135	62
1885.....	31	20	11	31	19	12	25	16	9	37	23	9	52	35	17	176	118	58
1886.....	31	24	7	22	11	11	29	17	12	33	18	15	54	39	15	169	109	60
1887.....	36	27	9	26	24	2	40	26	14	40	24	16	38	23	15	180	124	56
1888.....	58	43	15	34	27	7	40	20	20	18	8	10	29	14	15	179	112	67
1889.....	54	40	14	29	21	8	29	17	12	24	11	13	65	40	25	201	129	72
1890.....	75	59	16	39	24	15	35	21	14	71	39	32	74	53	21	294	196	98
1891.....	86	62	24	58	33	25	41	27	14	77	45	32	105	60	45	367	227	140
1892.....	115	92	23	54	36	18	45	23	22	85	45	40	71	38	33	370	234	136
1893.....	146	121	25	72	41	31	51	21	30	67	37	30	67	35	32	403	254	149
Totals	738	565	173	405	262	143	436	259	177	532	305	227	657	381	276	2,768	1,771	997

Here is shown the great and growing cause of accidents and consequent suffering incident to the miner and helper in producing the coal so lavishly used in our manufactories, places of business and homes. The following table gives the total number of non-fatal accidents with the percentages caused by falling roof and sides:

Total number Non-Fatal Accidents, and the percentages caused by falling roof and sides—for 11 years—by districts and for the State.

YEARS.	FIRST DISTRICT.		SECOND DISTRICT.		THIRD DISTRICT.		FOURTH DISTRICT.		FIFTH DISTRICT.		THE STATE.	
	Total		Total		Total		Total		Total		Total	
	Total	Per cent.	Total	Per cent.	Total	Per cent.	Total	Per cent.	Total	Per cent.	Total	Per cent.
1883.....	49	73.5	21	57.1	59	71.2	47	55.3	56	30.4	232	57.3
1884.....	57	72	19	73.7	42	69	33	72.7	46	58.7	197	68.5
1885.....	31	64.5	31	61.3	25	64	37	75.9	52	67.3	176	67
1886.....	31	77.4	22	50	29	58.6	33	54.5	54	72.2	169	64.5
1887.....	36	75	26	92.3	40	69	40	60	38	60.5	180	68.9
1888.....	58	74.1	34	79.4	40	65	18	44.4	29	48.3	179	62.6
1889.....	54	74.1	29	72.4	29	58.6	24	45.8	65	61.5	201	64.2
1890.....	75	78.7	39	61.5	35	60	71	55	74	71.6	294	66.7
1891.....	86	72.1	58	56.9	41	66	77	58.4	105	57.1	367	61.9
1892.....	115	80	54	66.6	45	51.1	85	53	71	55.5	370	63.2
1893.....	146	82.9	72	56.9	51	41.2	67	55.2	67	52.2	403	63
Totals	738	.....	405	.....	436	.....	532	.....	657	.....	2,768	.....
Per cents.....	.....	76.6	.....	64.7	.....	59.4	.....	57.3	.....	57.3	.....	64

The prominent feature presented here is the remarkable increase in the number of these accidents and the large percentages attributed to the treacherous roof and sides. Examined by districts it is observed that in the First and Second is found the largest increase in accidents and also in the percentages attributed to falling roof and sides. The column for the State the past four years shows a very large increase, the number this year being 100 per cent. more than for the year 1889; falling roof and sides accounts for 64 per cent. of the whole for the past eleven years.

The following table presents for a series of eleven years, the casualties of all kinds occurring in and about the mines of the State:

YEARS.	CASUALTIES—ALL KINDS.			PERCENTAGE CAUSED BY FALLING ROCK AND COAL.		
	Number killed.	Number injured.	Total.	Killed.	Injured.	Total.
1883	134	232	366	31.4	57.3	48.1
1884	46	197	243	56.5	65.5	66.3
1885	39	176	215	51.3	67	64.2
1886	52	169	221	61.5	64.5	63.8
1887	41	180	221	68.3	68.9	68.8
1888	55	179	234	60	62.6	61.9
1889	42	201	243	62	64.2	63.8
1890	53	294	347	67.9	66.7	66.9
1891	60	367	427	55	61.9	60.9
1892	57	370	427	49.1	63.2	61.4
1893	69	403	472	69.6	63.3	64
	648	2,768	3,416	54.5	64	62.2

The average number of men killed for each year is found to be 59, and the average number caused by falling roof and sides 32; the average number of injured for each year is 248, and an average of 161 by the aforementioned cause. The occupations of the 403 men injured in the mines during the year and their conjugal relations are given in the following table:

Non-Fatal Accidents by occupations, and conjugal relations of the injured.

OCCUPATIONS.	Total number injured	DISTRICTS AND NUMBER INJURED IN EACH.					CONJUGAL RELATIONS.			
		1st.	2d.	3d.	4th.	5th.	Single.	Married.	Children.	Dependents.
Blacksmith.....	1	.....	.....	1	.....	.....	.....	1	2	3
Blasters.....	7	.....	.....	.....	4	3	3	4	8	12
Cagers.....	8	.....	1	.....	5	2	3	5	10	15
Carpenter.....	1	.....	1	.....	.....	.....	1	.....	.....	.....
Car-trimmer.....	1	.....	.....	.....	.....	1	1	.....	.....	.....
Drivers.....	76	21	15	10	18	12	55	21	34	59
Fireman.....	1	.....	.....	.....	.....	1	1	.....	.....	.....
Foreman.....	1	.....	.....	.....	1	.....	.....	1	6	7
Laborers.....	13	3	3	3	.....	4	4	9	11	20
Loaders.....	28	.....	.....	.....	18	10	21	7	18	25
Miners.....	239	115	47	32	16	29	90	149	445	597
Operator.....	1	.....	1	.....	.....	.....	.....	1	2	3
Pit-bosses.....	2	.....	.....	2	.....	.....	.....	2	11	13
Pump-man.....	1	1	.....	.....	.....	.....	1	.....	.....	.....
Roadmen.....	5	5	.....	.....	.....	.....	1	4	14	18
Runners.....	5	.....	.....	.....	3	2	3	2	6	8
Sinker.....	1	1	.....	.....	.....	.....	.....	1	1	2
Timberers.....	3	.....	.....	.....	2	1	2	1	1	2
Top-men.....	2	.....	.....	2	.....	.....	.....	2	2	4
Track-layers.....	1	.....	.....	1	.....	.....	.....	1	4	5
Trappers.....	4	.....	4	.....	.....	.....	4	.....	.....	.....
Visitor.....	1	.....	.....	.....	.....	1	1	.....	.....	.....
Water-bailer.....	1	.....	.....	.....	.....	1	1	.....	.....	.....
Totals.....	403	146	72	51	67	67	192	211	575	793

It will be noticed that considerable more than half are miners, while drivers and loaders comprise over one-fourth of the whole number. There are 793 wives and children which, with the injured men themselves, makes nearly 1,200 people dependent upon these men deprived of labor, or upon friends.

The time lost by the men injured is presented in the following table:

Non-Fatal Accidents—by Districts—with time lost by the injured.

DISTRICTS.	Total.	Single.	Married.	Children	Dependents.	Total time lost—days.	Average number days per man.	Number of men reported as losing time.
First.....	146	60	86	269	359	6,198	48	129
Second.....	72	37	35	101	138	2,090	30	70
Third.....	51	17	34	80	115	2,190	43	51
Fourth.....	67	41	26	72	98	3,416	61	56
Fifth.....	67	37	30	53	83	2,538	40	64
Totals.....	403	192	211	575	793	16,432	44.4	370

This shows 370 men as losing an average of 44.4 days of working time, leaving 33 men still suffering from injuries, some

reported as permanently disabled, and others unable to go to work at the date of this report. These accidents are reported as having occurred at mines operated by 92 companies, being over 4 injured men to each company. One company in the First district reports 56 injured, another 24. One company operating mines in the Third, Fourth and Fifth districts reports 48, another company in the second district reports 32 as disabled. A final table of statistics of casualties is presented showing the nature of the injuries sustained.

Non-Fatal Accidents—By Nature of Injuries and by Districts.

INJURIES.	DISTRICTS.					Totals.	Percent-ages.
	First.	Second.	Third.	Fourth.	Fifth.		
Ankles broken	1	1	1	.....	1	4	.99
Ankles injured.....	1	2	1	.....	4	8	1.98
Arms broken.....	4	2	1	5	2	14	3.47
Arm injured.....	1	1	2	2	1	7	1.73
Backs broken.....	3	.....	.....	.....	.....	3	.74
Backs injured.....	26	7	5	3	6	47	11.66
Bodies injured.....	4	6	7	24	17	58	14.39
Collar-bone broken.....	5	2	2	3	1	13	3.22
Eyes injured.....	1	.....	.....	.....	.....	1	.24
Eyes put out.....	.....	1	1	.....	.....	2	.49
Faces injured.....	.....	.....	3	.....	2	5	1.24
Feet broken.....	3	.....	.....	.....	.....	3	.74
Feet injured.....	9	6	4	1	.....	20	4.98
Fingers broken.....	7	.....	.....	.....	.....	7	1.73
Fingers cut off.....	.....	.....	2	.....	.....	2	.49
Fingers injured.....	8	.....	1	1	1	11	2.97
Hands injured.....	6	3	.....	2	3	14	3.47
Heads injured.....	10	5	3	2	7	27	6.7
Hip injured.....	4	1	.....	1	1	7	1.73
Jaw-bone broken.....	.....	.....	1	.....	.....	1	.24
Knees broken.....	1	1	2	.....	.....	4	.99
Legs broken.....	31	15	7	16	16	85	21.09
Legs injured.....	7	12	4	3	1	27	6.7
Nose broken.....	2	.....	.....	.....	.....	2	.49
Ribs broken.....	2	4	1	.....	2	9	2.23
Shoulders broken.....	2	.....	.....	.....	.....	2	.49
Shoulders injured.....	2	2	3	2	1	10	2.48
Spine injured.....	.....	.....	.....	.....	1	1	.24
Toes cut off.....	1	.....	.....	.....	.....	1	.24
Toes injured.....	.....	1	.....	.....	.....	1	.24
Wrist broken.....	2	.....	.....	1	.....	3	.74
Totals	146	72	51	67	67	403	100.00

This table reveals more forcibly the suffering experienced by these 403 injured men; 154 or 38 per cent. endured broken bones; 108 or 26.8 per cent. injured bodies; many of these injuries resulting in permanent disability or crippling the man for life.

From the reports of the inspectors the following further details are collected:

First District.—The number of men suffering by accident in this district the past year was 163, of these 17 resulted in

death and 146 were injured so as to lose time; the number killed is 7 more than last year, the number injured 31 more. Of the fatal accidents 15 were caused by falling rock and coal, 3 of these occurred by one accident; 10 wives were made widows and 40 children left fatherless. Of the non-fatal accidents 86 were married men having 359 dependents, of whom 269 were children, making an average of 4 persons to each family; 129 are reported as losing an average of 48 days each, 14 were unable to work at the date of this report; 60 sustained broken bones, 32 of whom suffered broken legs. One man had both legs broken, and had been idle the entire year, another had his leg amputated; 3 men had their backs severely injured, one died shortly afterwards, the other two were permanently disabled, one with a family of 6 the other 7. Falling roof and sides was the cause of 88 per cent. of the fatal and 83 per cent. of the non-fatal accidents.

Second District.—Five men lost their lives in this district during the past year, and 72 were injured. Last year there was only one killed and 54 injured. The number of non-fatal accidents this year is nearly 25 per cent. more than reported for any previous year. Of the fatal accidents 60 per cent. were caused by falling rock and coal; of the non-fatal 57 per cent., and 25 per cent. by pit-cars. Thirty-five of the injured were married men, having average families of 4 persons, one with a family of 14 persons, another with 11.

Thirty-three per cent. of the men injured sustained broken bones, 32 or nearly 45 per cent. of the accidents occurred at the Spring Valley mines. Seventy men lost an average of 20 days from injuries, one man received permanent injuries, another had not recovered at date of this report.

Third District.—In this district there were 12 men killed, and 51 injured so as to lose time; the average was 43 days to each man injured; one man was idle six months, another 5 months; 34 were married men, having 115 dependents; 82 per cent. of the injured were drivers and miners; 41 per cent. received injuries from falling roof and sides, and 25.5 per cent. by pit-cars.

Fourth District.—The number of men killed in this district the past year was 10, the number injured so as to lose time 67. The time lost by the injured was an average of 61 days; 11

men were unable to go to work at date of report; 26 married men, having 98 dependents. Falling roof and sides and pit-cars caused 85 per cent. of the accidents. Twenty-six suffered broken bones, 16 of whom sustained broken legs, 4 of these had not recovered at date of this report, the others lost an average of 4 months time; one man had both legs broken and was idle six months.

Fifth District.—In this district 25 men were killed, and 67 injured. The number of fatal accidents is the largest ever reported in the district; 64 per cent. of the killed was caused by falling coal. Of the number injured 30 were married men, having 83 dependents; the average time lost by 64 men who had recovered was 40 days. Falling roof and sides and pit-cars caused 73 per cent. of the injuries. Twenty-two sustained broken bones, 16 of whom suffered broken legs. One man had a leg so badly injured by falling coal it had to be amputated; he had been unable to work for ten months and was idle at the date of this report.

PHYSICAL CHARACTER OF COAL MINES.

In gathering the coal statistics of the State for the past year, it was deemed best that a full report of the physical characteristics and distinctive modes of the workings of all the coal mines would be appreciated by every one in any way interested in the coal industry of the State. The last summarized information of this character was contained in the report of the Bureau for the year 1887, so that any comparisons now made will show what changes, if any, may have been wrought in these particulars during the past six years. Stripping or surface mines are omitted.

The total number of mines is 55 less than reported in 1887; the number and character of the mines of the State are set forth in the following comparative table:

YEARS.	Total number of mines.	KINDS OF OPENINGS.			KINDS OF POWER USED.			METHODS OF WORKING.	
		Shaft.	Slope.	Drift.	Steam.	Horse.	Hand.	Long- Wall.	Pillar- and- Room.
1887.....	808	460	94	254	283	295	230	46	762
1893.....	753	466	88	199	313	287	153	46	707

In the varied changes of ownership and business, the abandonment and closing of mines, the consolidation of companies and firms, the forming of new companies, the opening of new mines and the re-opening of old ones, seems to have worked a comparatively slight change in the number or character of the kinds of openings during the six years. The number of shafts has increased 6, while the number of slopes has decreased 6 and drifts, 55. The following table gives the number of different mines of the two years by districts:

DISTRICTS.	YEAR 1887.				YEAR 1893.			
	Total number of mines.	Kinds of Openings.			Total number of mines.	Kinds of Openings.		
		Shaft.	Slope.	Drift.		Shaft.	Slope.	Drift.
First.....	68	62	1	5	71	66	4	1
Second.....	275	115	39	121	217	106	35	76
Third.....	236	90	41	105	223	87	38	98
Fourth.....	111	91	5	15	95	87	.....	8
Fifth.....	118	102	8	8	147	120	11	16
The State.....	808	460	94	254	753	466	88	199

This showing is that the number of shafts has increased 4 in the First district and 18 in the Fifth; and decreased 9 in the Second district, 3 in the Third and 4 in the Fourth, leaving a net gain of 6 shafts in the six years.

The number of mines and the different kinds of power used, and the methods of working the coal, is given for the same years in the following table:

DISTRICTS.	YEAR 1887.						YEAR 1893.							
	Total No. mines.	Kinds of Power used.			Methods of Working.			Total No. mines.	Kinds of Power used.			Methods of Working.		
		Steam.	Horse.	Hand.	Long-Wall.	Pillar-and-Room.	Steam.		Horse.	Hand.	Long-Wall.	Pillar-and-Room.		
First.....	68	41	27	.....	25	43	71	42	29	.....	27	44
Second.....	275	40	103	132	8	267	217	38	98	81	10	207		
Third.....	236	58	101	77	6	230	223	72	90	61	5	218		
Fourth.....	111	59	36	16	7	104	95	60	28	7	3	92		
Fifth.....	118	85	28	5	.....	118	147	101	42	4	1	146	
The State.....	808	283	295	230	46	762	753	313	287	153	46	707		

Here it is shown that steam-power has been introduced and is now used in 30 more mines than six years ago. Of these

mines 16 are in the Fifth district, 14 in the Third and 1 each in the First and Fourth districts; the Second district has 2 less than in 1887. Mines in which other kinds of power is used have decreased 85; of these 77 were hand and 8 horse-power.

The number of mines of the long-wall system of workings is the same as six years ago; however, some changes have taken place in this class of mines in the different districts. There has been an increase of 2 each in the First and Second districts and 1 added in the Fifth; in the Third district there is 1 less, and 4 less in the Fourth.

Of the mines in which the pillar-and-room method is worked, there is an increase of 1 in the First district, and 28 in the Fifth; in the Second district the number has decreased 60, and 12 each in the Third and Fourth districts. The following table gives the detailed information by counties:

Physical Character of the Coal Mines of the State—1893.

DISTRICTS AND COUNTIES.	Number of mines.	Kinds of openings.			Kinds of power used.			Hand or machine mines.		METHODS OF WORKING COAL			System of underground haulage.	
		Drift.	Slope.	Shaft.	Steam.	Horse.	Hand.	Hand.	Machine.	Long wall.	Room and pillar.	Blasted from the solid.	Hand.	Mules.
THE STATE.....	753	199	88	466	313	287	153	712	11 41	46	378	a 329	377	f 373
FIRST DISTRICT.....	71	1	4	66	42	29	....	69	1 2	27	40	b 4	31	g 40
Grundv.....	24	....	....	24	12	12	....	23	1 1	12	24	....	12	12
Kankakee.....	21	....	....	2	1	1	....	2	....	2	2	....	1	1
La Salle.....	23	1	4	23	18	10	....	27	1 1	10	27	b 1	11	17
Livingston.....	14	....	....	14	10	4	....	14	....	....	11	3	5	8
Will.....	3	....	....	3	2	3	....	3	....	3	3	....	2	1
SECOND DISTRICT.....	*217	76	35	106	38	98	81	217	....	10	175	32	195	h 22
Bureau.....	18	....	5	13	7	11	....	18	....	7	9	2	6	12
Hancock.....	4	1	....	3	....	3	1	4	....	1	3	....	4	....
Henry.....	28	5	7	16	11	14	3	28	....	....	26	2	26	2
Knox.....	32	9	7	16	2	18	12	32	....	....	32	....	32	....
Marshall.....	12	10	....	2	2	....	10	12	....	2	10	....	10	i 2
McDonough.....	33	17	....	16	5	11	17	33	....	....	33	....	33	....
Mercer.....	19	6	4	9	5	8	6	19	....	....	5	14	15	j 4
Rock Island.....	18	6	4	8	5	7	6	18	....	....	11	7	18	....
Schuyler.....	7	5	....	2	1	2	4	7	....	....	2	5	5	2
Stark.....	24	9	1	14	....	15	9	24	....	....	21	....	24	....
Warren.....	22	8	7	7	....	9	13	22	....	....	29	2	22	....

Physical Character of the Coal Mines—1893—Concluded.

D. STRICTS AND COUNTIES.	Number of mines.	Kinds of openings.			Kinds of power used.			Hand or machine mines.		METHODS OF WORKING COAL			System of underground haulage.	
		Drift.	Slope.	Shaft.	Steam.	Horse.	Hand.	Hand.	Machine.	Long wall.	Room and pillar.	Blasted from the solid.	Hand.	Mules.
THIRD DISTRICT.....	†223	93	38	87	72	90	61	222	¶ 1	5	39	c 179	123	k 100
Cass.....	3	...	...	3	2	1	...	3	...	1	...	b 2	2	1
Fulton.....	72	44	6	23	18	18	36	72	...	...	23	d 49	54	18
Logan.....	3	...	...	3	3	...	...	3	...	...	...	3	...	i 3
McLean.....	3	...	...	3	3	...	...	3	...	2	...	...	...	i 3
Menard.....	9	...	...	9	6	3	...	8	¶ 1	...	...	b 9	3	6
Peoria.....	72	35	19	18	23	23	21	72	...	...	16	56	42	l 30
Tazewell.....	10	...	3	7	5	5	...	10	...	...	...	10	4	i 6
Vermillion.....	49	19	10	20	10	35	4	49	...	...	...	e 49	18	31
Woodford.....	2	...	...	2	2	...	...	2	...	2	...	...	...	i 2
FOURTH DISTRICT.....	† 95	8	...	87	60	28	7	76	19	3	69	23	22	h 70
Bond.....	1	...	...	1	1	...	...	...	1	...	1	...	...	1
Calhoun.....	1	1	...	...	...	1	...	1	...	...	1	...	...	1
Christian.....	6	...	...	6	6	...	...	3	3	...	6	...	...	i 6
Greene.....	5	2	...	3	...	3	2	5	...	...	...	...	5	...
Jersey.....	4	3	...	1	...	1	3	4	...	...	4	...	4	...
Macon.....	3	...	...	3	3	...	...	3	...	2	...	1	...	3
Macoupin.....	16	...	...	16	13	3	...	8	8	...	16	...	3	13
Madison.....	22	...	...	22	11	11	...	16	6	...	21	1	1	21
Montgomery.....	3	...	...	3	3	...	...	3	...	1	2	...	...	3
Morgan.....	3	...	...	3	...	3	...	3	...	...	3	...	†	...
Sangamon.....	21	...	...	21	21	...	...	20	1	...	...	20	...	j 21
Scott.....	4	2	...	2	1	1	2	4	...	...	3	1	4	...
Shelby.....	6	...	...	6	1	5	...	6	...	...	6	...	5	1
FIFTH DISTRICT.....	§147	16	11	120	101	42	4	128	** 19	1	55	91	6	j 141
Clinton.....	3	...	...	3	3	...	...	2	1	...	1	2	...	3
Gallatin.....	5	4	...	1	1	...	4	5	...	...	...	5	4	1
Jackson.....	17	...	6	11	11	6	...	10	** 7	...	12	5	...	17
Marion.....	6	...	...	6	6	...	...	...	...	1	1	4	...	6
Perry.....	18	1	...	17	16	2	...	17	1	...	1	17	2	16
Randolph.....	14	...	...	14	10	4	...	14	...	...	...	14	...	14
Saline.....	6	3	1	2	3	3	...	6	...	...	4	2	...	6
St. Clair.....	64	2	4	58	44	20	...	55	9	...	29	35	...	j 64
Washington.....	3	...	...	3	3	...	...	3	...	...	...	3	...	3
Williamson.....	11	6	...	5	4	7	...	10	1	...	7	4	...	11

* Seven surface mines in Knox county not included.

† Thirteen surface mines in Vermillion county not included.

‡ Nine mines in Cumberland, Effingham, Jasper, Pike and Richland counties not included.

§ Six mines in Franklin, Hamilton, Jefferson, Saline and Williamson counties not included.

¶ Three mines not reported.

¶ Four mines using both systems.

¶ Using both systems.

** One mine using both systems.

a Both systems worked in 32 mines.

b Both systems worked in 1 mine.

c Both systems worked in 31 mines.

d Both systems worked in 2 mines.

e Both systems worked in 27 mines.

f Seventeen mines use cable system.

g One mine has electric cable.

h Three mines use cable system.

i One mine uses cable system.

j Two mines use cable system.

k Eight mines use cable system.

l Four mines use cable system.

VENTILATION OF MINES.

Among the many improvements and additions made to mining plants in the State during the past several years, perhaps no one betterment, incident to mining coal, has been given more attention than that of mine ventilation. The improvements in ventilation have been made quite generally throughout the State, and have been noted from year to year in the reports of the inspectors. Complete statistics of the systems of ventilation were collected for the past year. The following table shows the different modes of ventilation of mines, and the average number of men to each for the past year, and for the year 1887:

YEARS.	METHODS OF VENTILATION, 1887-1893.								
	Total number of mines.	FAN.		FURNACE.		STEAM.		NATURAL.	
		Number of mines.	Average number of men.	Number of mines.	Average number of men.	Number of mines.	Average number of men.	Number of mines.	Average number of men.
1887.....	793	176	81	286	63	27	21	304	4
1893.....	746	286	106	189	16	20	24	251	6

This shows that fans for ventilating mines are largely taking the place of all other modes. The mines in which fans are now used employ about 90 per cent. of the miners of the State. The following tables present the enumerations for the year 1887 and the present year, by districts:

Number of Mines and Methods of Ventilation, 1887, by Districts.

DISTRICTS.	Total number of mines.	FAN.		FURNACE.		STEAM.		NATURAL.	
		Number of mines.	Average number of men.	Number of mines.	Average number of men.	Number of mines.	Average number of men.	Number of mines.	Average number of men.
First.....	63	38	128	17	15	3	20	10	5
Second.....	275	18	96	40	14	11	23	206	4
Third.....	236	35	66	120	12	4	14	77	2
Fourth.....	100	49	73	46	6	.....	.....	5	11
Fifth.....	114	36	54	63	23	9	23	6	8
The State.....	*793	176	81	286	63	27	21	304	4

* Fifteen mines not reported, 11 in the Fourth district and 4 in the Fifth district.

Number of Mines and Methods of Ventilation, 1893, by Districts.

DISTRICTS.	Total number of mines.	FAN.		FURNACE.		STEAM.		NATURAL.	
		Number of mines.	Average number of men.	Number of mines.	Average number of men.	Number of mines.	Average number of men.	Number of mines.	Average number of men.
First	71	34	237	13	23	9	43	15	7
Second	217	23	193	14	18	.....	.....	180	6
Third.....	223	73	72	119	12	9	10	22	2
Fourth.....	*83	70	95	3	10	.....	.....	15	7
Fifth.....	147	86	66	40	25	2	4	19	5
The State.....	*746	286	106	189	16	20	24	251	6

* Seven mines not reported.

Reviewed by districts it is found that the number of mines adopting the fan system of ventilating has been mainly in the Third, Fourth and Fifth districts. A final table follows, giving a summary of the mines and the different modes of ventilation, by counties:

Description of the different Systems of Ventilation in the coal mines of the State, 1893.

DISTRICTS AND COUNTIES.	Total number of mines		SYSTEMS OF VENTILATION.										
			FAN.			FURNACE.			STEAM-JET.			NATURAL.	
			Number of mines.	Average depth of mines.	Number of men em- ployed.	Number of mines.	Average depth of mines.	Number of men em- ployed.	Number of mines.	Average depth of mines.	Number of men em- ployed.	Number of mines.	Average depth of mines.	Number of men em- ployed.
THE STATE.....	753	286	190.3	30,251	189	68.2	2,980	20	76	485	251	43.8	1,422
FIRST DISTRICT.....	71	34	176.7	8,049	13	56.2	299	9	69.9	385	15	26.3	98
Grundy	24	12	116.8	3,543	5	46.6	63	1	32	6	6	34.7	32
Kankakee	2	1	80	276	1	67	8	.....	.....	.....	.....	.....	.....
LaSalle	28	14	273.2	3,054	4	41.3	85	4	87.8	222	6	19.5	48
Livingston	14	6	107.8	916	3	88.7	143	3	64.3	136	2	14	12
Will.....	3	1	54	260	.....	.....	.....	1	52	21	1	55	6
SECOND DISTRICT.....	217	23	189.3	4,450	14	57.3	250	.....	.....	.....	180	40.2	1,077
Bureau	18	7	383.7	2,828	11	64.6	162	.....	.....	.....	.....	.....	.....
Hancock	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	56.7	34
Henry	28	3	88.3	197	1	.....	49	.....	.....	.....	24	39.3	298
Knox	32	1	70	21	1	40	24	.....	.....	.....	30	26.5	183
Marshall	12	2	359.5	258	.....	.....	.....	.....	.....	.....	10	.....	19
McDonough	33	5	52.5	463	.....	.....	.....	.....	.....	.....	28	44.7	87
Mercer	19	4	66.3	644	.....	.....	.....	.....	.....	.....	15	35.7	66
Rock Island	18	.....	.....	.....	1	40	15	.....	.....	.....	17	47.3	138
Schuyler	7	1	54	39	.....	.....	.....	.....	.....	.....	6	20	41
Stark	24	.....	.....	.....	.....	.....	.....	.....	.....	.....	24	66.5	130
Warren	22	.....	.....	.....	.....	.....	.....	.....	.....	.....	22	24.5	81

Description of the different Systems of Ventilation—Concluded.

DISTRICTS AND COUNTIES,	SYSTEMS OF VENTILATION.													
	Number of mines.		FAN.				FURNACE.				STEAM-JET.			
			Number of mines.	Average depth of mines.	Number of men employed.	Number of mines.	Average depth of mines.	Number of men employed.	Number of mines.	Average depth of mines.	Number of men employed.	Number of mines.	Average depth of mines.	Number of men employed.
THIRD DISTRICT	223	73	129.1	5,285	119	66.7	1,394	9	81.8	93	22	54.9	53	
Cass.....	3	1	205	17	1	20	9	1	214	30	...	...	...	...
Fulton.....	72	22	69.4	1,258	43	47.3	271	7	44.7	48	...	...	...	...
Logan.....	3	3	297.3	298	...	...	...	...	...	...	...	...	...	...
McLean.....	3	3	405.7	436	...	...	...	...	...	...	...	...	...	...
Menard.....	9	4	172.8	1,427	4	103.5	112	...	...	...	1	100	3	...
Peoria.....	72	24	96.5	852	27	88.6	472	...	...	...	21	52.6	50	...
Tazewell.....	10	5	106	226	5	87	73	...	...	...	...	...	...	...
Vermilion.....	49	9	111.9	1,328	39	65.3	457	1	205	15	...	...	...	...
Woodford.....	2	2	515	443	...	...	...	...	...	...	...	...	...	...
FOURTH DISTRICT	495	170	278	6,820	3	53.3	30	...	...	...	15	70.3	106	...
Bond.....	1	1	373	104	...	...	...	...	...	...	...	...	...	...
Calhoun.....	1	1	...	...	1	60	16	...	...	...	...	...	...	...
Christian.....	6	6	657	1,104	...	...	...	...	...	...	...	...	...	...
Greene.....	15	...	...	...	1	40	7	...	...	...	1	60	16	...
Jersey.....	84	...	...	...	1	60	7	...	...	...	2	50	11	...
Macon.....	3	3	632	456	...	...	...	...	...	...	...	...	...	...
Macoupin.....	26	12	351.3	1,752	...	...	...	...	...	...	4	123	39	...
Madison.....	22	22	127	1,008	...	...	...	...	...	...	...	...	...	...
Montgomery.....	3	3	510.7	276	...	...	...	...	...	...	...	...	...	...
Morgan.....	83	...	...	...	...	...	...	...	...	...	...	...	...	...
Sangamon.....	21	21	253.6	2,027	...	...	...	...	...	...	...	...	...	...
Scott.....	4	1	100	48	...	...	...	...	...	...	3	30.3	11	...
Shelby.....	6	1	...	45	...	...	...	...	...	...	5	62.2	29	...
FIFTH DISTRICT	147	86	176.5	5,647	40	83	1,007	2	77.5	7	19	43.5	88	...
Clinton.....	3	3	367.3	234	...	...	...	...	...	...	...	...	...	...
Gallatin.....	5	1	85	45	...	...	...	...	...	...	4	37.5	16	...
Jackson.....	17	11	114.4	1,021	4	67.5	62	...	...	...	2	55	7	...
Marion.....	6	6	715	716	...	...	...	...	...	...	...	...	...	...
Perry.....	18	13	89	1,132	4	92.8	156	1	80	4	...	...	...	...
Randolph.....	14	4	160.5	174	10	62.5	220	...	...	...	...	...	...	...
Saline.....	6	6	49	128	...	...	...	...	...	...	...	...	...	...
St. Clair.....	64	36	144.2	1,613	22	93.3	569	1	75	3	5	52.4	18	...
Washington.....	3	3	348.7	117	...	...	...	...	...	...	...	...	...	...
Williamson.....	11	3	76.3	467	...	...	...	...	...	...	8	36.3	47	...

†Seven mines not reported.
‡Three mines not reported.

§One mine not reported.
||No report.

THE EXAMINATION OF INSPECTORS.

The mining laws of the State provide for the examination and appointment, every two years, of five mine inspectors, being one for each of the five mining districts into which the State is divided. In pursuance of law, the Commissioners of this Bureau had previously selected the following to comprise the Board of Examiners:

Patrick Meehan, Breeds Station, and J. M. Browning, Du Quoin, coal operators; George Evans, Lincoln, and William

McDonald, Braidwood, coal miners; J. E. Craine, mining engineer, Murphysboro. The Board was organized by electing Mr. Meehan president. Announcement was made that the examination would be held at the Capitol September 12, 1893. These notices were distributed generally and published in many of the newspapers of the State.

The Board of Examiners met at the time and place designated. Twenty-five candidates presented credentials as to eligibility under the law for the position of State inspectors. The sessions of the Board continued through six days. As a result of the examination, it was ordered that certificates of competency be issued to the following:

John Keay, Walton Rutledge, John G. Massie, Thomas Weeks, James Freer, Henry E. Malloy, T. S. Cumming, Thomas Hudson, David Beveridge, Henry Banghart, James A. Keating, Edward Fellows, Hugh J. Hughes.

The names of the entire class was certified to the Governor as to their competency to fulfill the requirements of inspectors. The following were selected and commissioned as inspectors of mines for the five districts; the present post-office address is given:

T. S. Cumming, Gardner, Inspector of the First District.

Edward Fellows, Galva, Inspector of the Second District.

James A. Keating, Peoria, Inspector of the Third District.

John Keay, Springfield, Inspector of the Fourth District.

John G. Massie, Belleville, Inspector of the Fifth District.

In response to many applications for the questions and answers submitted and required of applicants for the position of mine inspectors, the full list of questions with the answers are published for the benefit of future aspirants for these positions. Of course the same questions are never submitted at any two examinations, yet students may obtain a clear idea of the range of the tests which may be presented at future examinations.

QUESTIONS AND ANSWERS.

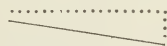
Q. In what part of this State do the coal measures attain the greatest thickness?

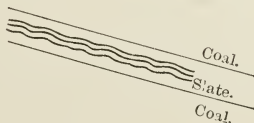
A. In the eastern part.

Q. What is the extent of the Illinois coal fields?

A. In round numbers about 35,000 square miles, and the boundary may be briefly defined as follows: Commencing on the north-east boundary in Grundy county, its northern boundary extends nearly due west to the Mississippi river, a few miles above Rock Island, and from thence its western boundary extends down the river nearly to the north line of Henderson county, where it trends inland for a few miles from the river, leaving a belt of older rocks between the coal measures and the river on the western border of the State, varying in width from 10 to 30 miles, as far south as the southern line of Jackson county, from whence it trends eastward through Johnson, Pope and Hardin counties, crossing the Ohio river at Battery Rock.

Q. What caused the splitting of some of the seams in this State?

A. After the bottom bench is formed, the coal or earth subsides, leaving the earth in this shape  then it becomes inundated and the slope gathers sediment until it reaches dotted line, then the formation of coal begins again, then the earthy matter between the coal becomes slate, it then has this appearance



Q. What is the nature, composition, characteristics and treatment of the gases met with in mines?

A. Carbureted hydrogen gas, called fire-damp. Carbonic acid gas, called black-damp. Carbonic oxide gas, called white-damp. Sulphureted hydrogen gas, called stone-damp. Fire-damp is composed of 1 atom of C. and 4 atoms H. and its specific gravity is .555, air being 1. Black-damp—1 atom of C. and 2 atoms of O. and its specific gravity is 1.552, air being 1. White-damp—1 atom of C. and 1 atom of O. and its specific gravity is .972, air being 1. Fire-damp is found near the roof; so is white-damp, being lighter than air. Black-damp and stone-damp are found near the floor, being heavier than air. Stone-damp is composed of 1 atom of sulphur and 2 atoms of H. and its specific gravity is 1.180, air being 1. One treatment will apply to all, dilute them with pure air so as to render them harmless.

Q. What is the most explosive mixture of fire-damp and air?

A. 9.38 parts of air to 1 part of fire-damp.

Q. What gas is it that produces death, although it cannot be detected by color, taste or smell. How can it be detected?

A. White-damp can only be detected by its effects.

Q. What do we understand by the term hydro-carbon?

A. It is a term used for any compound of hydrogen and carbon; all mine gasses are hydro-carbons.

Q. Explain the common properties belonging to air and gases, namely: Inertia, impenetrability, indestructability.

A. Inertia is the property of passiveness, air and gas are inert; it is the incapability of matter to change its own state of rest or motion. Impenetrability, by which is meant that if any space is filled with air no other material body can occupy the same space without first displacing the air. Indestructability is the property which renders matter incapable of being destroyed. We may change its form, but we cannot deprive it of existence.

Q. What is a cluded gas? What would 20,000 cubic feet CH₄ weigh at the center of the earth?

A. It is a gas shut up or imprisoned in the coal under pressure. It would weigh nothing, as the attraction there is equal in all directions.

Q. In a gaseous mine where the seam pitches five degrees, where will the gas transpire most freely? Give the law of gravitation and define specific gravitation and define specific gravity.

A. In the raised part of the works, there being less pressure against the gas. That every particle of matter in the universe attracts every other particle of matter with a force directly proportional to its mass and decreasing as the square of the distance. Specific gravity is the weight of a substance compared with the weight of the same bulk of another substance, it is a method of finding the density of a body; water is taken as the standard for solids and liquid and air for gas.

Q. If CH_4 is emitted from a blower near the bottom and another near the top, which will diffuse most rapidly? Explain the atomic theory.

A. By the law of gravitation we learn that fire-damp, being lighter than air, would fly to the roof, passing through the air, then it would gradually diffuse; therefore, gas emitted from the floor would diffuse more rapidly than if emitted from the roof, and the diffusion would be more complete. The atomic theory supposes that matter is composed of inconceivable minute portions called atoms, each having a definite shape, weight, color, etc., which cannot be changed by any chemical or physical force.

Q. If in a mine there were 64 men and boys and 14 mules, the mine is giving off 1,707 cu. ft. of CH_4 per minute, and the fan can only discharge the amount of air required by law, how many splits would it be advisable to make?

A. I would make no splits, nor work any men, boys or mules. The quantity of air and gas discharged per minute by the fan is 8,400 cu. ft. for 14 mules; 6,400 cu. ft. for men and boys; total, 14,800 cu. ft. of air—1,707 cu. ft. of gas=13,093 air; $13,093 \div 1,707 = 7.7$, nearly a highly explosive mixture. There is 7.7 of air to 1. of gas.

Q. What is the velocity of the air under the following conditions: P—8.21. B—29.5. T—64?

A. $1.3253 \times 29.5 \div 459 \times 64 = .07475$ lbs. pressure and $8.21 \div .07475 = \sqrt{109.84} = 10.43 \times 8 = 33.44$ velocity.

Q. An air-way 6'x5' and 5250' long is passing 30,000 cu. ft. of air per minute, with a water-gauge of 1.5 inches, what water-gauge would it require to pass the same quantity through an air-way 8'x5'?

A. $40:30::1.225: .91875$ W. G.

Q. The effective H. P. of a fan is 42 and the pressure is 14 lbs. per sq. ft., what is the 'quantity' in cu. ft. passing per minute?

A. $33,000 \times 42 = \text{total units of work } 1,386,000 \div 14 \text{ lbs. pressure per sq. ft.} = 99,000 \text{ cu. ft. of air passing.}$

Formula: $\frac{33,000 \times \text{H. P.}}{\text{P.}} = \text{cu. ft. of air.}$

Q. The effective H. P. of a fan is 30 and the quantity of air pressure passing is 90,000 cu. ft. per minute. what is the water-gauge? If the quantity is increased to 270,000, what will be the water-gauge under the altered conditions?

A. $30 \times 33,000 = 990,000 \div 90,000 = 11 \text{ lbs. pressure} \div 5.2 = 2.1153 \text{ inches of W. G., and for } 270,000 \text{ cu. ft. of air, or three times the quantity, W. G. would stand nine times higher, or } 2.1153 \times 9 = 19.0377 \text{ inches W. G.}$

Q. What opposing forces act on the air?

A. There are three, viz.: "Gravity," which binds it to the earth; "centrifugal" and "repellant" (heat forces), which tend to hurl it off into space. Under the action of the latter forces the atmosphere, like a bent spring, is ready to bound away at the first opportunity, but the attraction of the earth (gravity) holds it in its place.

Q. A fan 8' diameter, running 230 revolutions per minute and passing 62,000 cu. ft. of air per minute, with a water-gauge of 1 inch, what is the equivalent orifice of the fan?

A. $.37 \times 62 \div \sqrt{1} = 22.94 \text{ sq. ft. equivalent orifice of fan.}$

Q. An air-way 7'x6' and 3,572' long is passing 20,000 cu. ft. of air per minute, water-gauge 1 inch, what is the equivalent orifice?

A. $.37 \times 20 \div \sqrt{1} = 7.40 \text{ sq. ft. equivalent orifice.}$

Q. Define centrifugal and centripetal forces.

A. Centrifugal force tends to drive a body from the center; centripetal force tends to draw a body towards the center.

Q. Given a self-acting incline plane, length 160' and pitch 1' in 40' with double track, it is intended to let down 4 full cars

and bring up four empty cars; cars weigh 1,500 lbs. each, and loaded cars contain one ton each of coal, time of descent one minute and forty seconds, what is the friction?

A. Four cars times 2,000 lbs = 8,000 × 4 ft. = 32,000 ÷ 160 length of plane = 200 lbs.; amount of friction, cars and rope balance each other. Formula: $\frac{\text{Load in lbs.} \times \text{height of plane.}}{\text{Length.}} = \text{Friction.}$

Q. What is the power of a cylinder boiler of the following dimensions: Diameter 40" length 30'?

A. $3.1416 \times 40 = 125.6 \div 3 = 83.53 \times 360 = 30,150.36 \div 144 = 209.44 \div 15 = 13.96$ H. P.

Q. What thickness of shaft pillars would you leave at the bottom of a shaft 875 feet deep?

A. There should be a foot square of pillar for each foot the shaft is in depth; in this case, the sides of the shaft pillars should be 875 feet.

Q. In opening up a new coal-field, what conditions would determine your method of working the seams, viz.: Room-and-pillar or long-wall?

A. If the coal is 5 feet or under, with good strong slate top that would bend, and the market was such that the mine could run nearly steady, then I would work it long-wall, but under any other conditions I would work room-and-pillar.

Q. The diameter of a safety-valve is 4 inches, and it is 12 inches from the fulcrum to the center of the stem; valve and steam weigh 15 lbs., lever 40 inches long and weighs 10 lbs., the weight of ball 40 lbs., and hangs at end of lever, at what pressure will the boiler blow off?

A. Dia. valve $4 \times 4 \times .7854 = 12$ area of valve. $15 \times 2 = 30$ lbs. $10 \times 20 = 200 + 30$ lbs. = 230 lbs. $40 \times 40 = 1600$ lbs. + 230 lbs. = 1830 lbs. $\div 12.56 = 145.7$ lbs. pressure at which boiler will pop off.

Q. What should be the least length of a connecting rod for a stationery engine, cylinders 16 inches by 32 inches?

A. $2\frac{1}{2}$ by the length of stroke is the least length any connecting rod should be, so $32 \times 2.5 = 80$ " length of rod.

Q. What weight will a pair of first motion engines raise, cylinders 16 inches by 32 inches, drum 8 feet, steam pressure 60 lbs., allowing one-third for friction?

A. $16 \times 16 \times .7854 \times 64 \times 60 \div 12 \times 8 \times 3.1416 = 2,560$ lbs. $\times 2 \div 3 = 1706.6$ lbs., the load the engines can start.

Q. An engine 36-inch stroke, steam pressure 80 lbs., drum 8 feet in diameter, load three tons, what is the area and diameter of the cylinders?

A. $12 \times 8 \times 3.1416 \times 6000 \text{ lbs.} = 1,738,000 + 864,000 \div 72 \times 80 = 450 \div .7854 = \sqrt{573} = 24''$ diameter of cylinder.

Q. A mine 480 feet deep, making 620 gallons of water per minute, steam pressure 60 lbs., what would be the dimensions of a pump to discharge the water?

A. $620 \times 281 = 143,220 \div 900 = 159.13$ area of water end. $159.13 \div .7854 = \sqrt{202} = 14.2$ diameter of water end. $.434 \times 480 = 208 \div 60 = 3.47$. $159.13 \times 3.47 = 552.1811 \div .7854 = \sqrt{703} = 26.5$ diameter of steam end.

Q. Give the modulus of rupture of the different kinds of timber used in mines.

A. There are but two kinds of timber used in mines in this country, pitch-pine and oak; for pitch-pine the modulus of rupture is 1,682, and for oak 1,672.

Q. What load will a stick of good oak carry, loaded uniformly, 10 inches broad, 14 inches deep, and 16 feet long?

A. $14 \times 14 \times 10 \times 4 \times 1672 = 13,108,480 \div 16 \times 12 = 68,273$ break-load $\div 5 = 13,654$ working load.

Q. What is the safe working load of an iron wire rope $1\frac{1}{4}$ inches in diameter, a steel wire rope $1\frac{1}{2}$ inches in diameter, and a chain the links of which are $\frac{7}{8}$ inches diameter?

A. Iron wire rope $1.25 \times 3.1416 = 3.92 \times 3.92 = 15.3664 \times 1.5 = 23$ tons breaking strain $\div 5 = 4.6$ tons working load. Steel wire rope $1.5 \times 3.1416 = 4.7 \times 4.7 = 22.09 \times 2.5 = 55.225$ breaking load $\div 5 = 11.045$ safe load. Chain $\frac{7}{8}''$ diameter $7 \times 7 \div 9 = 5\frac{4}{9}$ tons, safe load.

Q. What constitutes a good safety-lamp?

A. That it be light, strong and give a good light and self-extinguishing in the presence of gas.

Q. What are the uses of the following instruments in connection with mines: The barometer, thermometer, water-gauge and anemometer?

A. The barometer is an instrument which shows the varied pressure of the atmosphere, and if the barometer falls we may expect an increased quantity of gas. It varies from $38\frac{1}{2}$ to 51 inches.

The thermometer is an instrument used for measuring the difference of temperature between the upcast and downcast shafts that we may be able to calculate the amount of air passing by the action of the furnace.

The water-gauge is an instrument used for measuring the drag or friction of air passing through mines.

The anemometer is an instrument used for measuring the velocity of the air in mines.

Q. In a certain mine there are two splits, one 7'x7' and 3,000' long, and the other is 5'x6' and 1,500' long. There are 75 men and 7 mules working in the former, and 50 men and 5 mules in the latter, both splits are subject to the same pressure, viz.: a water-gauge of 1.5 inches, what would be the area of a regulator to give the men in the first split a lawful amount of air, and where should it be placed?

A. There would be 8,000 cu. ft. required in the short split, 11,700 cu. ft. in the long split. $8 \times .37 = 2.96 \div 1.224 = 2.41$ ft., area of regulator; place the regulator in the return of short split.

Q. With 0 at the north, the azimuth reading of the transit is 319° , what is the quadrant reading?

A. $360^\circ - 319^\circ = 41^\circ$, the reading of the quadrant.

Q. The elevation of the surface at No. 1 hole is 300 ft., hole 300 ft. deep to coal. No. 2 hole is 350 ft., hole 450 ft. deep to coal. No. 3 hole is 375 ft., hole 525 ft. deep to coal. From No. 1 to No. 2 is 1,000 feet, from No. 2 to No. 3 is 500 feet, what is the descent or ascent of the coal seam?

A. 150 feet total fall $\div 1,500$ feet = 10 ft. in 100 ft. descent.

Q. If you had an entry going N. 60° E. and you turned No. 1 room off to go N. 15 E., and 212.13 feet from No. 1 you turned No. 2 room off to go N. 30 W., at what distance in No. 1 room would No. 2 connect?

A. The distance in No. 1 room would be 300 ft.; $212.13 \times 212.13 \times 2 = 300$ ft.

Q. The depth of water above the orifice is 60 feet, area of orifice 3 feet, what is the velocity and cubic feet passing per minute?

A. $32.16 \times 60 \times 2 = 62.1$ velocity. $62.1 \times 60 = 3,726 \times 3 = 11,178$ cu. ft. of water per minute.

Q. A $3\frac{3}{4}$ -inch valve weighs $2\frac{1}{2}$ lbs., and acts at $4\frac{1}{2}$ inches from the fulcrum, while the pressure is 5 atmospheres, and the lever 21 inches long, weighing $6\frac{1}{2}$ lbs., what is the weight that will just begin to act under these circumstances?

A. $3.75 \times 3.75 \times .7854 = 11.04468750 \times 60 \times 4.25 = 2,816.3953125000 - 79 = 2737.52 \div 21 = 130.35$ lbs.

Q. What is the relative power required to move a train of pit-cars on an incline plane, the system of one mile in length, the rope, which travels one mile per hour, weighs 4 lbs. per yard, and delivers 70 tons of coal per hour; in cars which weigh when empty 12 cwt. each, and carry 20 cwt. of coal each; the average fall from the pit bottom is 1 in 12? What is the total resistance upon the system, and the size of cylinder to overcome such resistance, average steam pressure 50 lbs., piston speed 300 feet per minute?

A. $70 \times 2,000 = 140,000$ lbs. $140 \times 1,200 = 168,000$ lbs. $3,520 \times 4 = 14,080$ lbs. = Total $322,080$ lbs. $\div 28 = 11,510$ lbs. friction. $140,000 \div 12 = 11,666.6$ lbs. $+ 11,510$ lbs. = $23,176.6 + 11,588.3 = 34,764.9$ total resistance of haulage. Rope travels 5,280 ft. per hour $\div 60 = 88$ ft. per min., therefore $34,764.9 \times 88 = 3,058,311.2 \div 300$ piston speed = $10,197.7$ pressure upon piston $\div 50 = 203.94$ $\div .7854 = \sqrt{259.1} = 16''$ dia. of cylinder.

Q. Having a pair of engines, cylinders 18x36-inch stroke, the drum 8 foot diameter and the pressure at steam gauge 60 lbs., cut-off $\frac{3}{4}$ stroke, what would be the average pressure of steam in the cylinder, and what would be the load these engines would start from the bottom of a shaft 150 feet deep, taking $\frac{1}{3}$ for friction?

A. $\frac{18 \times 18 \times .7854 \times 57.8 \times 72}{(8 \times 12 \times 3.1418) \times 301.5936} = 3,511.3$ lbs. $\times 2 \div 3 = 2,340.8$, load they would start

Statistical Summary, showing the Number, Character, Product, etc., of the Collieries of Illinois for the year ending July 1, 1893.—By Districts.

DISTRICTS.	MINES.							MINERS.				Average number of running days.	No. of kegs of powder used.	CASUALTIES.			
	No. of counties.	No. of mines.	No. of shipping mines.	No. of mines in local trade.	No. of new mines.	No. of abandoned mines.	Estimated number of acres worked out during year.	Average No. of miners.	Highest No. of miners employed.	No. of other employes.	No. of boys under ground.			No. of killed.	No. of widows.	No. of children.	No. of injured.
First.....	5	71	38	33	11	10	676.87	5,593	6,897	1,934	187	204.8	13,436	17	10	40	146
Second.....	11	224	27	197	41	57	470.1	3,663	4,443	1,351	105	171.1	15,638	5	1	4	72
Third.....	9	236	81	152	6	26	639.92	3,764	5,234	1,730	286	174.4	101,823	12	5	13	51
Fourth.....	18	104	59	45	6	11	798.50	3,231	4,152	2,869	141	1236	101,623	10	3	7	67
Fifth.....	13	153	102	51	6	16	523.68	4,385	5,419	1,361	135	227.2	121,187	25	13	42	67
Totals.....	56	788	310	478	70	120	3,109.07	20,636	26,145	9,245	354	.....	353,772	69	32	106	403
Averages....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1192	.....	.....	.....	.....	.....

* One mine omitted in estimating average.

† Seven mines omitted in estimating average.

‡ Fourteen mines omitted in estimating average.

§ Fourteen mines omitted in estimating average.

¶ Average based on 752 mines.

|| Number of boys included in the number of other employes.

Statistical Summary, showing the Number, Character, Product, etc., of the Collieries of Illinois for the year ending July 1, 1893.—By Districts.—Concluded.

DISTRICTS.	Average price paid per ton for hand mining screened coal.	PRODUCT.			AVERAGE VALUE OF COAL PER TON AT THE MINES.		AGGREGATE HOME VALUE OF PRODUCT.		
		Total tons of coal.	Total tons of lump coal (3,000 pounds).	Total tons of other grades of coal.	Screen'd coal.	Other grad's	Total product.	Lump or screened coal.	Other grades.
First.....	\$0.86.81	3,394,686	2,913,144	481,542	\$1.3332	\$0.34	\$4,043,638	\$3,883,775	\$163,863
Second.....	0.90.74	2,000,664	1,708,909	291,755	1.4552	0.3349	2,584,494	2,486,770	97,724
Third.....	0.65.3	3,397,433	2,860,299	537,134	1.0735	0.356	3,260,758	3,070,499	191,259
Fourth.....	0.55.62	5,784,866	4,508,382	1,276,484	0.8362	0.3063	4,160,922	3,769,966	390,956
Fifth.....	0.43.21	5,371,915	4,121,165	1,249,750	0.8025	0.3767	3,777,783	3,306,950	470,833
Totals....	.....	19,949,564	16,112,899	3,836,665	.....	.....	\$17,827,595	\$16,517,960	\$1,314,635
Averages	*\$0.71454	.....	.....	.....	\$1.025	\$0.3427	.....	.....	.....

* Based on 6,061,413 tons of coal, being the total tons mined by hand and paid for by the ton after screening.

FIRST INSPECTION DISTRICT---1893.

MR. GEORGE A. SCHILLING,

Secretary of the State Bureau of Labor Statistics, Springfield, Ill.:

SIR:—In compliance with section twelve of the mining code of the State, I herewith submit the tenth annual report of the First District for the year ending July 1, 1893:

The report gives tabulated statements, showing the number of mines in operation, both shipping mines and mines for local trade; new mines, and abandoned mines; the depth of shafts and elevations of covers over the coal in slopes and drifts; the thickness of the coal seams with the geological number of each seam; the estimated number of acres worked out during the year; kind of ventilation and capacity of ventilator; the number of kegs of powder used during the year; the average number of miners employed with the highest number employed at any one time during the year, and all other employes in and around the mine, with the number of boys employed underground; the number of days worked, with an average for each county and the district; the price paid per ton for hand mining in summer and winter; the total tonnage of the mines, including lump and other grades, sold or consumed at the mines; the average value per ton at the mines, with the aggregate value of the total product; the number of hand miners and others employed by the day; number and kind of mining machines, with the total tonnage cut by machines, and the number of employes in and around machine mines; the casualties, fatal and non-fatal, with a recapitulation of all the mining counties in the district.

The following summaries are presented:

Total number of mines	71
Shipping mines	38
Local mines	33
New mines	11
Abandoned mines	10
Estimated number of acres worked out during the year	676.87
Average number of miners employed	5,593
Highest number employed at one time during the year	6,897
Number of other employes in and around the mines, including 187 boys	1,934
Total number of employes	8,831
Average number of working days for the district	204.8
Total number of kegs of powder used	13,306
Average price for hand mining, in summer	\$0 82.06
Average price for hand mining, in winter	\$0 89.11
Number of tons of lump coal produced	2,913.1
Number of tons of all other grades sold or consumed	481.542
Total tonnage for the district	3,394.686

Average value of lump coal per ton at the mines	\$1 33.32
Aggregate value of total product.....	\$4,043,638
Number of coal cutting machines used	10
Number of tons cut by machines.....	90,795
Number of employes in machine mines.....	98
Number of fatal accidents.....	17
Number of wives made widows	10
Number of children made fatherless.....	40
Number of non-fatal accidents	146
Total number of accidents.....	163
Number of employes to each fatal accident	520
Number of employes to each non-fatal accident	61
Number of tons to each fatal accident	199,687
Number of tons to each non-fatal accident	23,252

Comparative table for each county, in tons of lump coal, for the years ending July 1, 1892 and 1893:

COUNTIES.	Tons pro- duced in 1892.	Tons pro- duced in 1893.	Tons increase.	Tons decrease.
Grundy.....	1,108,419	1,106,574	.....	1,845
Kankakee.....	81,793	83,700	1,907	.....
LaSalle.....	1,261,467	1,242,566	.....	18,901
Livingston.....	404,491	402,370	.....	2,121
Will.....	108,897	77,934	.....	30,963
Total.....	2,965,067	2,913,144	1,907	53,830

Net decrease in the district for the year. 51,923 tons.

New Mines.—The following named mines have been put in operation during the year: In Grundy county, the Chicago, Milwaukee & St. Paul Coal Co.'s No. 4 mine, located about one mile north of the village of Braceville; the Star Coal Co.'s No. 3 mine, located one-fourth of a mile west of the village of Carbon Hill; Leharty Bros. mine, north of Morris; also one mine reopened at Morris by John Teiford. In LaSalle county, the Standard Coal Co. mine, at Seneca; the Marseilles Land and Water Improvement Co. mine, at Marseilles; the Acme Coal Co.'s mine, at Streator, and W. B. Scott's mine, near Kangley. In Livingston county, the Streator Clay Manufacturing Co. and Alexander Bergren have opened mines at Streator. In Will county, at Braidwood, William Mally opened a local mine.

Prospective Mines.—In Grundy county, the Big Four have sunk a new shaft, and are equipping for a large output in the future; at Morris, Esley & Co. have put down a shaft for local trade only. In Kankakee county, the Wilmington Gardner Coal Co. have been prospecting with the drill and will commence sinking operations in a short time at Clark City. In LaSalle county, at Streator, Messrs. Plumb and Baer & Co. are each sinking a shaft to reach the lower vein or No. 2 of the geological section of the State; the Chicago, Wilmington and Vermilion Coal Co. have sunk and are busy equipping its new No. 1 mine, located four miles north of Streator. In Will county, at Braidwood, the same company have finished sinking the escapement shaft, and are now engaged sinking the hoisting shaft of what will be their Q mine.

Abandoned Mines and Mines Not in Operation During the Year.—In Grundy county, the Wilmington Mining and Manufacturing Coal Co. abandoned its No. 3 mine permanently, after closing it down for four months. In

LaSalle county, Goodmanson and Dawson, Freeman C. Bliss, and one of William Howe & Co.'s mines at Streator have been permanently abandoned. In Livingston county, Samuel Simpkins' mine was abandoned on account of the river breaking into it. John Marshall and Muncie & Son's mines were also abandoned, the coal being exhausted, all located at Streator. In Will county, the Chicago, Wilmington and Vermilion Coal Co.'s N mine is abandoned; the Ballantine & Fleming mine, at Braidwood; Purshuse & Co. and Jesse Masy's mines have not been in operation during the year, the last two in Streator.

Mining Machines.—At Carbon Hill, Grundy county, the Star Coal Co. has taken all the mining machines out of its No. 1 mine, and is not operating, at present, machines in any of its mines. The Chicago, Wilmington and Vermilion Coal Co. has not operated any mining machines during the year and has moved its engine and dynamo to Streator.

Escapement Shafts.—The following companies have sunk escapement shafts during the year: The Star Coal Co., at its No. 3 mine at Carbon Hill; the Chicago, Milwaukee & St. Paul Coal Co., at its No. 4 mine; Howe & Co mine, and the Marseilles Land and Water Improvement Co.

Floods.—The following mines were flooded with water February 4th, in Livingston county, at Streator: Samuel Simpkins, Pleasant Hill Coal Co., Richard Evans, Barrackman & Sons, Lukins & Cavanaugh and Alexander Bergren. In LaSalle county, May 11th, the Star Coal Co.'s No. 1 shaft at Kangley was flooded through a break which came to the surface, allowing the water from Moon's creek to flow into the mine. All of the flooded mines were idle for some time. S. Simpkins finally abandoned his mine on account of surface breaks near the bed of the river.

Improvements.—In LaSalle county the Star Coal Co. at its No. 2 mine, Kangley, sunk an air-shaft near the working face, thus shortening the travel of the air-current one-half, and greatly improving the sanitary condition of the mine; the Illinois Valley Coal Co., Oglesby, put in a new fifteen-foot fan and new engine, 12x14 inches, at its No. 1 mine which gives a large increase to the volume of air passing in the mine; the Oglesby Coal Co. has removed its fan-engine up close to the fan; this does away with the wire ropes which were used for transmitting the power of the engine to the fan, and which caused a great deal of trouble through stretching and breaking, also a loss of working time; the LaSalle County Carbon Coal Co. has increased its boiler power at the Rockwell mine, and are replacing the old hoisting engines with a pair of Litchfield engines, each 18x32 inches. Mr. E. Hakes, of Rutland, is now equipping his new shaft, having succeeded in getting the railroad track into it after over one year's delay; he intends to hoist all the coal from the mine at this new shaft and will use the old shaft as an escapement shaft.

In Livingston county the Chicago, Wilmington and Vermilion Coal Co. has sunk a shaft for water and ventilation purposes on the eastern portion of their No. 3 mine, thus shortening the travel of the air-current and greatly improving the ventilation of this part of the mine; a traveling

compartment has also been made so that the miners working in this portion of the mine can reach their work with less travel than formerly.

Fatal Accidents.—During the year fifteen fatal accidents have occurred, causing the death of seventeen persons, six of whom were single and eleven were married men; the latter leaving fifty persons dependent for support.

Fatal Accidents in Detail.—August 23, 1892. Andrew Samuelson, machine helper, a married man, was instantly killed in the Star Coal Co.'s No. 1 mine at Carbon Hill, Grundy county, by a large piece of rock falling on him while at work trying to take it down so as to make it safe for the men following with the mining machine.

August 29, 1892, George Heinz, miner, a single man, employed in the Mattheussen & Hegler Zinc Co.'s mine, at LaSalle, LaSalle county, was fatally injured by a fall of rock near the face of the entry in which he was working. He died an hour and a half after being injured.

October 10, 1892, Peter Raffalti, miner, a married man employed in No. 1 mine of the Star Coal Co., at Carbon Hill, Grundy county, was instantly killed by a falling rock in his room; a slip in the roof was the cause of the rock falling.

October 15, 1892, George Singula, miner, a married man, was instantly crushed to death in Samuel Simpkin's mine at Streator, Livingston county, by a large piece of rock falling on him at the face of his room. He had passed through a clay slip a few days previous but failed to secure the roof.

October 18, 1892, George Yearsley, miner, a single man, employed in the Oglesby Coal Co.'s mine at Oglesby, LaSalle county, was instantly killed by a falling rock at the face of his room. The roof had taken a heavy break-through during the night and while making an examination in the morning before commencing work, the rock fell on him, breaking his neck.

October 28, 1892, Charles Swanson, miner, a single man, employed in N. Plumb's mine at Streator, LaSalle county, was fatally injured about the body by a falling rock at the face of his room; he died from the injuries the following day.

December 21, 1892, E. McClairry, top-man, was fatally injured, while visiting in Samuel McClairry's mine, near Kangley, LaSalle county, by the falling of a large piece of rock; death occurred a short time after the accident took place.

January 31, 1893, Michael Davidson and Michael Halley, both married, and Joseph Smith, single, all miners, were instantly killed in Peter Rynn's mine at Streator, LaSalle county, by a falling rock; they had left their rooms, and were all sitting on the south entry eating dinner, when, without any warning, the rock came down, killing the three men. Smith's brother was near by and had a very narrow escape, although uninjured.

February 2, 1893, Joseph Tuppin, miner, a married man, employed in the mine of the Pleasant Hill Coal Co. at Streator, Livingston county, was instantly crushed to death by a large piece of rock falling on him while at work in his room; the rock was so large it had to be broken before the body could be extricated.

March 18, 1893, Emique Bulgarina, miner, a married man, was fatally crushed by a falling rock in his room at the Big Four Co.'s mine at Coal City, Grundy county; he had fixed a shot a short time before which cleared a slip in the roof, and while taking away the loose coal the rock fell on him, causing death thirty minutes later.

March 20, 1893, John Robbin, night roadman, single, was instantly killed by falling down the shaft of the Star Coal Co.'s mine at Kangley, LaSalle County; he was assisting to put a mine-car loaded with ties on the cage at the lower landing. The cage being a little low, the car went off of the track on to the cage, he climbed over the top of the car, and while doing so, the engineer raised the cage a little, causing him to lose his balance, and he fell into the shaft.

April 6, 1893, John Lamb, messenger boy, was instantly crushed to death between two railway cars at the Big Four Co.'s mine at Coal City, Grundy county. He jumped on a moving car to ride down to the coal chute and failed to observe another empty car standing in the slack switch, and only passing space between the two tracks. On reaching this place he was caught between the moving and standing cars, crushing in his head and breast.

April 28, 1893, Samuel Skelton, miner, a married man, was fatally crushed by a large piece of rock falling on him at the face of his room in the Star Coal Co.'s No. 3 mine at Carbon Hill, Grundy county. He knew that the rock was bad, and had made some preparation to take it down, but while loading a car it fell and caught him, injuring him so severely that he died the following morning.

June 5, 1893, Frank Boska, miner, a married man, was instantly killed in No. 2 mine of the Star Coal Co. at Carbon Hill, Grundy county, by a large piece of rock falling on him in his room; when taken from under the rock it was found that his neck was broken.

June 8, 1893, John Anderson, miner, a married man, employed in No. 3 mine of the Chicago, Wilmington & Vermilion Coal Co. at Streator, Livingston county, was fatally crushed by falling coal at the face of his room; he was gathering his tools together at quitting time, when the coal fell on him, causing death the following day.

Following are tables of the fatal and non-fatal accidents:

Fatal Casualties—First District, 1893.

Date.	Name.	Age.	Occupation.	Residence.	Married.	Widow.	Children.	Single.	Dependents.	Cause of Accident.
1892.										
Aug. 23	Andrew Samuelson.	41	Mach. help'r	Carbon Hill.	1	1	8	..	9	Falling rock.....
Aug. 29	George Heinz.....	34	Miner.....	LaSalle.....	..	..	..	1	..	Falling rock.....
Oct. 10	Peter Raffalti.....	38	Miner.....	Carbon Hill.	1	1	1	..	2	Falling rock.....
Oct. 15	George Singula.....	65	Miner.....	Streator.....	1	1	4	..	5	Falling rock.....
Oct. 18	George Yearsley.....	27	Miner.....	Oglesby.....	..	..	..	1	..	Falling rock.....
Oct. 28	Charles Swanson.....	32	Miner.....	Streator.....	..	..	..	1	..	Falling rock.....
Dec. 21	E. McClairry.....	45	Topman....	Kangley.....	1	..	4	..	4	Falling rock.....
1893.										
Jan. 31	Michael Davidson...	40	Miner.....	Streator....	1	1	5	..	6	Falling rock.....
" 31	Michael Halley.....	24	Miner.....	Streator....	1	1	..	..	1	Falling rock.....
" 31	Joseph Smith.....	24	Miner.....	Streator....	..	..	..	1	..	Falling rock.....
Feb. 2	Joseph Tuppin.....	43	Miner.....	Streator....	1	1	3	..	4	Falling rock.....
Mar. 18	Emique Bulgarina...	23	Miner.....	Coal City...	1	1	2	..	3	Falling rock.....
Mar. 20	John Robbin.....	26	Roadman....	Kangley.....	..	..	..	1	..	Falling down shaft..
April 6	John Lamb.....	15	Mess'g'r boy	Coal City...	..	..	..	1	..	Crush'd bet. R.R.cars
April 28	Samuel Skelton.....	32	Miner.....	Carbon Hill.	1	1	4	..	5	Falling rock.....
June 5	Frank Boska.....	45	Miner.....	Carbon Hill.	1	1	8	..	9	Falling rock.....
June 8	John Anderson.....	40	Miner.....	Streator....	1	1	1	..	2	Falling coal.....
Total—17.					11	10	40		650	

RECAPITULATION OF FATAL CASUALTIES.

Residences.	No.	Occupation.	No.	Nature of Casualty.	No.	Colliery.	No.
Carbon Hill ...	4	Mach'n helper	1	Falling coal.....	1	Big 4 Coal Co.....	2
Coal City.....	2	Messenger...	1	Fall'g down shaft	1	C. Will. & Ver. Co.	1
Kangley.....	2	Miners.....	13	Falling rock.....	14	M. & H. Zinc Co...	1
LaSalle.....	1	Roadman.....	1	Railroad cars.....	1	McClairry, Saml...	1
Oglesby.....	1	Topman.....	1			Oglesby Coal Co...	1
Streator.....	7					Pleas'nt H. Coal Co.	1
						Plumb N.....	1
						Ryan, Peter.....	3
						Simkins, Saml.....	1
						Star Coal Co.....	5
Totals.....	17		17		17		17

Of the 17 fatal casualties, 11 were killed instantly; 1 died in 30 minutes; 1 lived an hour and a half; 1 died in a very short time and 3 died the following day after being injured.

Eleven were married men, leaving 10 widows and forty children, dependent; 1 man left 4 orphan children.

Non-Fatal Casualties—First District—1893.

Date.	Name.	Age.	Residence.	Married. Children.	Single. Dependents	Character of Injury and Cause of Accident.	Time lost— days.
1892.							
July 1	George Hardy	16	Braidwood	1	1	Leg broken by falling rock	112
" 9	Andrew Castentine	28	Diamond	1	1	Hand bruised by falling rock	28
" 9	Charles Johnstone	28	Braceville	1	2	Hand dislocated by falling rock	36
" 11	Joseph Bleeka	56	Braidwood	1	4	Back injured by falling rock	21
" 11	William Harvey	35	Braceville	1	6	Head and knee bruised by falling rock	105
" 15	Sebaston Fassarro	22	Diamond	1	1	Hand bruised by falling rock	21
" 18	Andrew Lucas	30	Streator	1	2	Back injured by falling rock	14
" 18	Thomas Pryde	23	Oglesby	1	1	Finger crushed by pit-car	14
" 18	Theodore Sable	24	Carbon Hill	1	1	Back injured by falling rock	17
" 19	Alex'nd'r Dennison	18	Braidwood	1	1	Head and breast crushed by pit-cars	21
" 23	Robert Swanson	35	Gardner	1	1	Both legs broken by falling rock	4
" 25	Robert Dale	32	Oglesby	1	1	Body injured by falling coal	16
" 30	E. Higgenbottom	45	Braidwood	1	4	Back injured by falling coal	21
" 30	John Edwards	42	Braidwood	1	5	Finger bruised by falling rock	42
" 30	John Thompson	17	Braidwood	1	1	Ankle injured by falling rock	21
" 30	Joseph Fenolica	35	Braidwood	1	3	Leg bruised by falling rock	42
Aug. 12	Frank Letz	17	Kangley	1	1	Collar-bone broken by falling coal	30
" 17	Thomas Coleman	16	LaSalle	1	1	Shoulder dislocated by falling coal	42
" 22	George McKinney	35	LaSalle	1	2	Leg broken by falling coal	60
" 24	Michael Shone	18	Kangley	1	1	Collar-bone and arm broken by falling coal	48
" 24	Messimer Farrare	25	Streator	1	1	Leg broken by falling coal	68
" 26	Andrew Dutko	18	Streator	1	1	Leg injured by pit-cars	17
" 27	Frank Koshaek	41	Kangley	1	1	Back injured by falling rock	40
" 29	Patrick Walsh	32	LaSalle	1	1	Rib broken by pit-car	26
" 31	John Roberts	45	Braidwood	1	5	Fingers bruised by falling rock	35
Sept. 1	Michael Klutcher	23	Kangley	1	1	Shoulder-blade broken by falling coal	46
" 1	Battista Manina	24	Carbon Hill	1	1	Head injured by falling rock	12
" 2	Michael Lawler	38	Braidwood	1	5	Back broken by falling rock	*
" 4	John Meiness	42	Streator	1	4	Foot injured by falling rock	61
" 6	August Brookman	21	Diamond	1	1	Leg bruised by pit-cars	42
" 7	John Tessillure	45	Braidwood	1	3	Knee injured by falling coal	182
" 12	Frank Molley	15	Diamond	1	1	Fingers bruised by pit-cars	46
" 16	Adam Poley	52	Braidwood	1	4	Body bruised by falling rock	56
" 16	Charles Johnson	32	LaSalle	1	3	Finger crushed by pit-cars	50
" 20	Domin'k Bartolusa	36	Diamond	1	3	Leg broken by falling coal	104
" 20	John Casho	40	LaSalle	1	5	Foot bruised by falling rock	40
" 21	John Toll	21	LaSalle	1	1	Collar-bone broken by falling coal	34
" 22	Alex. Williamson	17	Braidwood	1	1	Wrist broken by pit-cars	28
Oct. 3	Thomas Young	15	Braceville	1	1	Back bruised by falling rock	44
" 4	John Leonard	16	Kangley	1	1	Three fingers broken coupling pit-cars	28
" 5	Thomas Smith	60	Streator	1	3	Head bruised by falling coal	90
" 7	Mattio Minetto	27	Braidwood	1	1	Knee bruised by falling rock	35
" 8	Joseph Minetto	30	Braidwood	1	1	Back and hand injured by falling rock	35
" 8	Hugh Young	25	Braidwood	1	2	Finger broken by falling rock	21
" 8	Charles Barclay	35	Braidwood	1	3	Eye injured by falling rock	42
" 14	Valentine Tauscher	29	LaSalle	1	1	Hip bruised by falling rock	17
" 14	John Robbins	39	Braidwood	1	5	Finger bruised by falling rock	21
" 18	John F. Rowe	38	Braidwood	1	4	Wrist broken by falling rock	28
" 21	Andrew Brown	58	Braidwood	1	3	Finger bruised by falling rock	80
Nov. 1	James Vetrurea	23	Gardner	1	1	Back injured by falling rock	38
" 2	Jesse Brown	39	Braidwood	1	3	Leg broken by falling coal	195
" 2	John Venela	22	Carbon Hill	1	1	Back injured by falling rock	14
" 3	Thomas Coleman	55	LaSalle	1	4	Leg broken by falling coal	180
" 4	John Falko	25	Streator	1	1	Body injured internally by falling rock	30
" 9	Fred Hyderman	24	Streator	1	1	Foot injured by falling rock	93
" 11	William Katuski	21	Carbon Hill	1	1	Leg broken by falling coal	76
" 14	James Bell	27	Carbon Hill	1	1	Foot broken by falling rock	40
" 21	John Rutherford	41	Braceville	1	3	Leg broken by falling rock	102
" 28	Peter Mathers	56	Streator	1	2	Leg broken by falling rock	1
" 28	Patrick Sherlock	48	Braidwood	1	3	Leg cut by falling rock	62

Non-Fatal Casualties—First District—1893.—Continued.

Date.	Name.	Age.	Residence.	Married.	Children.	Single.	Dependents.	Character of Injury and Cause of Accident.	Time lost—days.
Dec.	1 James Albrile.....	42	Carbon Hill.	1	6	7		Back broken by falling rock.....	*
	2 Patrick Cushing....	46	Braidwood..	1	5	6		Back injured by falling rock.....	21
	2 Matto Pomo.....	36	Braidwood..	1	1			Hand bruised by falling rock.....	41
	5 Michael Chessmer..	28	Peru.....	1	1	2		Hips injured by pit-car.....	10
	7 Peter Deitz.....	23	Peru.....	1	1	2		Foot injured by falling coal.....	12
	11 Hugh Ward.....	20	Carbon Hill.	1	1			Leg broken by falling rock.....	68
	12 John Smith.....	29	LaSalle.....	1	1			Leg and arm broken by falling coal.....	70
	15 Charles Nelson....	38	Clark City..	1	1			Collar-bone broken by falling rock.....	60
	23 John Rednor.....	44	Kangley....	1	4	5		Back injured by falling rock.....	15
	21 Samuel Pall.....	55	LaSalle.....	1	3	4		Arm broken by falling coal.....	40
	24 William Diff.....	21	Carbon Hill.	1	1			Leg broken by falling rock.....	65
	27 John Battista.....	39	Clark City..	1	1			Finger broken by falling rock.....	40
	29 Hugh Moran.....	17	Kangley....	1	1			Finger broken coupling pit-cars.	30
	30 S. Markoski.....	31	LaSalle.....	1	1	2		Foot crushed by falling rock.....	35
1893.									
Jan.	6 Joseph Price.....	23	Braidwood..	1	1	2		Hip injured by falling rock.....	35
	7 Frederick Blemel..	44	Braidwood..	1	3	4		Back injured by falling rock.....	125
	11 Jacob Burcer.....	26	Kangley....	1	2	3		Head injured by props.....	15
	12 George Ernest.....	26	Carbon Hill.	1	1			Collar-bone broken by falling rock.....	75
	14 William Orr.....	16	Diamond....	1	1	4		Back injured by pit-cars.....	35
	14 James Rusiek.....	36	Braidwood..	1	5	6		Hand injured by falling rock.....	49
	17 David Courval....	42	Streator....	1	3	4		Hand and back injured by props.	45
	18 John Bohrer.....	33	Kangley....	1	1	1		Head injured by flying coal.....	42
	19 Patrick Corrigan..	29	Braidwood..	1	1	2		Back injured by falling rock.....	35
	20 William Memory...	30	LaSalle.....	1	2	3		Back and hips injured by falling coal.....	27
	20 Peter Macco.....	34	Diamond....	1	1			Back broken by falling coal.....	8
	23 Michael Ballant..	27	Streator....	1	2	3		Leg injured by falling rock.....	70
	26 J. Feathe covitch.	45	Kangley....	1	1			Foot injured by falling rock.....	30
	27 Louis Vacco.....	28	Carbon Hill.	1	1			Leg and arm broken by falling rock.....	72
	28 Michael Reter.....	48	Streator....	1	1	2		Foot injured by falling rock.....	14
	30 Ben Parnham.....	49	Streator....	1	4	5		Foot injured by falling rock.....	28
	30 Ben Daziel.....	50	Braidwood..	1	3	4		Back injured by falling rock.....	131
Feb.	7 Joseph Evans, Jr..	16	Braidwood..	1	1			Leg broken by falling rock.....	105
	8 Wm. Howard.....	24	Kangley....	1	1	2		Foot and ankle injured by pit-cars	20
	8 Jacob Koniloke....	35	LaSalle.....	1	5	6		Foot broken by falling rock.....	40
	10 David Noonan.....	25	LaSalle.....	1	1			Leg broken, ankle dislocated by tail chains.....	60
	11 Thomas Turnbull..	34	Braidwood..	1	2	3		Back injured by falling rock.....	84
	14 John Bucario.....	32	Diamond....	1	1			Leg broken by falling rock.....	42
	15 Jean Pomedid.....	52	LaSalle.....	1	1	1		Two fingers broken by falling rock.....	35
	15 Alfred Granson....	28	Streator....	1	1			Hip injured by falling rock.....	14
	23 Wm. E. Robner....	22	Carbon Hill.	1	1			Back injured by falling rock.....	16
	24 Mike Melchaska....	40	Braidwood..	1	5	6		Leg broken by falling rock.....	90
	25 Louis Guinea.....	39	Clark City..	1	1			Leg broken by falling rock.....	84
Mar.	1 M. Melcher.....	48	Braidwood..	1	6	7		Leg broken by falling rock.....	11
	1 Joseph Price.....	25	Braidwood..	1	1	2		Knee injured by falling rock.....	42
	1 Andrew Hydock....	37	Streator....	1	1			Back injured by falling coal.....	70
	3 Chas. McDonald..	22	LaSalle.....	1	1			Nose broken, thrown off pit-car	27
	4 Andrew Lawler....	44	Braidwood..	1	5	6		Arm broken by falling rock.....	75
	4 Antone Firentia....	43	Clark City..	1	6	7		Leg broken by falling rock.....	90
	6 Louis Romona.....	52	Clark City..	1	5	6		Finger broken loading cars.....	60
	7 Chas. Marks.....	33	LaSalle.....	1	3	4		Leg broken by falling rock.....	90
	11 Alfred Holmes....	25	Braceville..	1	1			Head and back injured by falling rock.....	29
	11 John Banayas.....	24	Streator....	1	1			Leg broken by falling rock.....	90
	13 S. Ferris.....	23	LaSalle.....	1	1	2		Nose broken by falling rock.....	30
	16 Julius Hill.....	34	LaSalle.....	1	1			Head and foot injured by falling rock.....	40
	27 Thos. Fleming.....	21	Braidwood..	1	1			Arm broken by falling rock.....	35
	29 Robt. Nelson.....	32	Braidwood..	1	4	5		Knee injured by falling rock.....	42
	29 Thos. Moffat.....	22	Braidwood..	1	1			Leg broken by pit-cars.....	84
Apr.	3 Herbert Minna.....	36	Peru.....	1	4	5		Shoulder broken by falling coal.....	1
	4 Joseph Sherlock..	40	Oglesby....	1	4	5		Toe cut off by falling rock.....	30
	5 John Gardner.....	18	Braceville..	1	1			Leg broken by falling rock.....	86
	5 Geo. Moore.....	50	Braidwood..	1	4	5		Shoulder injured by falling rock.....	49
	8 Antone Stilmore..	42	LaSalle.....	1	2	3		Three ribs broken by falling rock	30
	15 John Hoyer.....	38	Braidwood..	1	3	4		Hand injured by a nail.....	28
	18 Timen Hartand....	30	LaSalle.....	1	1	1		Fingers crushed by railroad cars	46

Non-Fatal Casualties—First District—1993.—Concluded.

Date.	Name.	Age.	Town.	Married.	Children.	Single.	Dependents	Character of Injury and Cause of Accident.	Time lost—days.
Apr. 21	Louis Boles.....	36	Braceville ..	1	5 ..	6	Leg broken by falling rock.....	67	
29	George Builetto....	15	Clark City..	...	1 ..	...	Body injured by pit-cars	4
May 1	Antone Barto.....	49	Braidwood..	...	1 ..	...	Arm broken by falling coal.....	56
3	John Halfpenny....	46	Streator	1	5 ..	6	Arm cut by falling rock.....	16	
10	John Postle.....	33	Braceville ..	1	1 ..	2	Back and side injured by falling bucket.....	27	
11	Wm. Mellish.....	23	Braceville ..	...	1 ..	...	Leg injured by falling rock.....	24
11	John Clapping.....	52	Peru	1	3 ..	4	Leg broken by falling rock	4	
14	Patrick McFadden..	60	Oglesby	1	3 ..	4	Back injured by falling coal.....	35	
16	Joseph Miller.....	23	Peru .....	...	1 ..	...	Finger cut off by pit-car.....	34
21	John McGrath.....	55	Braidwood..	1	6 ..	7	Back injured by falling rock.....	40	
27	Adam Pooley.....	52	Braidwood..	1	4 ..	5	Leg injured by falling rock.....	21	
27	Andrew Diggins....	37	Streator ....	...	1 ..	...	Back injured by falling rock.....	30
27	Matthew Charlton..	45	Streator	1	7 ..	8	Back injured by falling rock.....	21	
June 1	George Griswold..	33	Peru	1	2 ..	3	Leg broken by falling rock.....	4	
1	Dom. Geacomica....	41	Diamond ...	1	4 ..	5	Foot broken by falling rock	4	
1	John Mydouck.....	54	Streator	1	5 ..	6	Ankle broken by falling rock	4	
16	Lew Slager.....	30	Streator	1	5 ..	6	Head and shoulder injured by falling rock	4	
20	John Gilchrist.....	36	Braidwood..	1	5 ..	6	Leg broken by falling rock	4	
23	Jas. Bomish.....	29	LaSalle .....	...	1 ..	...	Leg broken by falling rock	4
27	John Sanderson....	30	Streator	1	3 ..	4	Back injured by falling rock.....	4	
30	Thos. Evans.....	17	Streator ....	...	1 ..	...	Back injured by falling rock.....	4
30	Robt. Klein.....	32	Braceville ..	1	3 ..	4	Leg broken by falling rock.....	4	
Totals—146 injured				86	269	60	359	

An average of 48 days lost time for 129 men reported.

* Permanently disabled.

† Amputated.

‡ Time lost not reported.

¶ Not at work July 1, 1893.

§ Afterwards died of fever.

|| Amputated, and unable to work July 1, 1893.

RECAPITULATION OF NON-FATAL CASUALTIES.

Residence.	No.	Occupation.	No.	Cause of accident.	No.	Colliery.	No.
Braceville	10	Drivers	19	Falling coal	19	C., M. & St. P. C. Co.	10
Braidwood	43	Laborers	3	Falling rock.....	102	Chi., Wil. & Ver. Co.	56
Carbon Hill	11	Miners.....	118	Flying coal.....	1	Cahill, James.....	2
Clark City	6	Pumpman....	1	Handling props..	2	Illinois Valley Co..	10
Diamond.....	9	Roadmen.....	4	Loading coal.....	1	LaSalle County Co.	9
Gardner	2	Sinker	1	Pierced by nail ..	1	Oglesby Coal Co. ..	4
Kangley	11			Pit-cars.....	17	Star Coal Co.....	24
LaSalle	22			Railroad cars	1	Union Coal Co.....	7
Oglesby.....	4			Tail-chain	1	Wil. & Gardner Co.	8
Peru	6			Sinking-bucket..	1	Wil. Min. & Mfg. Co.	16
Streator	22						
Totals.....	146		146		146		146

Table showing the number of persons injured, nature of injuries, time lost, with averages and percentages.

Nature of Accident.	No.	Married.	Single.	Dependents.	Total days.	Average days.	Per cent- age of injuries.
Ankle broken	1	1	.....	6	42	.....	.7
Ankle injured	1	.....	1	.....	21	21	.7
Arms broken	4	2	2	10	206	51.5	2.75
Arm injured	1	1	.....	6	16	16	.7
Backs broken <i>b</i>	3	2	1	13	.....	.....	2.05
Backs injured <i>c</i>	26	16	10	71	916	35.2	17.81
Bodies injured <i>a</i>	4	1	3	5	102	25.5	2.75
Collar-bones broken	5	.....	5	.....	247	49.4	3.42
Eye injured	1	1	.....	4	42	42	.7
Feet broken <i>a</i>	3	8	1	13	80	26.6	2.05
Fee ^r injured	9	6	2	25	333	37	6.16
Fingers broken	7	3	4	10	228	32.6	8.
Fingers injured	8	6	2	27	322	40.3	.5
Hands injured	6	3	3	13	203	34	4.11
Heads injured <i>a</i>	10	6	4	25	399	39.9	7.
Hips injured	4	3	1	6	76	19	2.75
Knees injured	4	3	1	11	301	75.2	2.75
Legs broken <i>d</i>	31	15	16	70	2,050	66	21.23
Legs injured	7	4	3	16	278	40	4.8
Noses broken	2	1	1	2	57	28.5	1.37
Ribs broken	2	2	.....	4	56	28	1.3
Shoulders broken	2	2	.....	7	46	23	1.3
Shoulders injured <i>a</i>	2	1	1	5	91	45.5	1.3
Toe cut off	1	1	.....	5	30	30	.7
Wrists broken	2	1	1	5	56	28	1.3
Totals	146	86	60	359	6,198	48	100.00

a One unable to work up to date.

b One dead and two permanently disabled.

c Two unable to work at this date.

d One man had both legs broken; one had his leg amputated; seven are unable to work up to date; one time lost unknown.

The following tables of each county gives detailed information of each colliery in the district; also a recapitulation by counties.

Respectfully submitted,

QUINTIN CLARK,

State Inspector, First Inspection District, Braidwood.

[illegible][illegible]

Grundy County, 1893—Concluded.

Name of firm, com- pany or person op- erating the mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.														Av. value of lump coal per ton at the mine.
	Miners em- ployed.		All other em- ployes.	Boys employed under ground.	Running days in the year.	Kegs of powder used during year.	Cas- ualties.		Prices paid per ton for hand mining		Tons of coal mined.				
	Av. during the year.	Highst dur- ing year.					Killed.	Injured.	Sum- mer.	Win- ter.	Total.	Lump coal.	Oth'r grades.		
C., M. & St. P. No. 2	270	330	80	5	261	10	..	5	\$0 87.5	\$0 95	146,590	140,590	6,000	\$1 25	
No. 4	162	62	4	4	184	50	..	5	87.5	95	39,817	38,217	1,600	1 25	
W. Star M. Co. No. 3	95	110	35	2	249	100	..	..	87.5	95	49,550	46,000	3,550	1 25
No. 5	115	138	36	5	247	238	..	..	87.5	95	67,730	63,000	4,730	1 25
Star Coal Co. No. 1	248	295	126	5	195	56	2	2	87.5	95	*123,796	109,871	13,925	1 34	
No. 2	286	304	106	6	217	95	1	8	87.5	95	166,642	148,017	18,625	1 34	
No. 3	86	156	50	3	126	45	1	1	87.5	95	28,878	25,628	3,250	1 34	
C., W. & V. Co., "O"	283	314	64	3	249	100	..	17	87.5	95	138,736	133,400	5,336	1 25	
"P"	265	339	60	2	256	125	..	15	87.5	95	110,182	105,945	4,237	1 25	
W. M. & M. Co. No. 4	325	400	60	10	240	400	..	16	87.5	95	168,338	166,738	1,600	1 40	
Wil. Gard. Co. No. 1	85	110	31	7	180	200	..	2	87.5	95	51,929	44,554	7,375	1 40	
Sun. Ck. Co. Big 4	120	140	35	4	200	150	2	..	87.5	95	73,948	65,761	8,187	1 25	
Heather & Woods.	20	26	4	..	220	..	..	..	1 20	1 20	8,170	7,200	970	2 15
Alex. Telfer No. 4.	4	5	1	..	260	..	..	..	1 16	1 16	2,630	2,560	70	1 75
Henry Kay.....	6	9	1	..	250	..	..	..	1 26	1 26	2,080	2,000	80	2 25
J. Cryer "Eureka".	5	10	1	..	200	..	..	..	1 26	1 26	1,650	1,500	150	2 25
Laherty Bros.....	3	7	1	..	190	..	..	..	1 26	1 26	1,100	1,000	100	2 25
F. Gilbride.....	3	5	1	..	180	..	..	..	1 26	1 26	940	800	140	2 25
George Blair.....	2	3	1	..	200	..	..	..	1 25	1 25	860	800	60	2 25
Alex. Bell.....	3	4	1	..	150	..	..	..	1 26	1 26	800	750	50	2 25
A. F. Watson & Co.	4	4	1	..	150	..	..	..	1 25	1 25	750	700	50	2 25
T. L. Thurston....	3	6	1	..	150	..	..	..	1 26	1 26	720	700	20	2 25
Geo. Burt.....	4	4	1	..	140	..	..	..	1 26	1 26	708	493	215	2 25
John Telford.....	2	3	1	..	230	..	..	..	1 26	1 26	375	356	25	2 25
Totals	2,237	2,884	760	53	1,569	6 71	..	..	..	..	1186,919	1106,574	80,345	.....
Averages ....	..	..	..	..	205	..	..	..	\$0 882	\$0 955	.....	.....	.....	\$1 32

* Partly cut by machines.

NOTE.—The amount of coal cut by machines was 21,681 tons.

Kankakee County, 1893—Concluded.

Wil. Gard. Co. No. 2	180	200	76	6	180	5	..	6	\$0 87.5	\$0 95	85,700	81,700	4,000	\$1 40
Thomas Treasure.	4	7	1	..	160	..	..	..	1 00	1 00	3,000	2,000	1,000	2 00
Totals	184	207	77	6	..	5	..	6	..	..	88,700	83,700	5,000	..
Averages .....	..	..	..	..	170	..	..	..	\$0 87.8	\$0 95.1	..	..	..	\$1.41

LaSalle County, 1893—Continued.

[illegible]

Livingston County—First District—1893.

[illegible]

LaSalle County, 1893—Concluded.

Name of firm, com- pany or person op- erating the mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.														Av. value of lump coal per ton at the mine.
	Miners em- ployed.		All other em- ployes.	Boys employed under ground.	Running days in the year.	Kegs of powder used during year.	Casual- ties.		Prices paid per ton for hand mining		Tons of coal mined.				
	Av. during the year.	High'st dur- ing year.					Killed.	Injured.	Sum- mer.	Win- ter.	Total.	Lump coal.	Oth'r grades.		
Star C. Co. No. 1..	95	125	45	6	169	275	4	9	\$0 72.5	\$0 80	42,557	33,776	8,781	\$1 24	
No. 2..	216	302	160	18	239	1,260	1	4	72.5	80	276,129	219,151	56,978	1 34	
LaSalle Carbon Co.	198	216	76	8	253	..	..	..	*70	*77.5	141,784	120,165	21,619	1 41
	144	180	26	4	219	..	..	5	*70	*77.5	73,513	62,751	10,762	1 41
Zinc Co.	50	60	18	..	310	1,383	1	..	+	..	77,448	77,448	..	1 32	
Ill. Val. Co. No. 1..	253	288	90	5	267	..	..	10	*70	*77.5	161,984	137,260	24,724	1 41
C. W. & V. Co. No. 2	200	210	60	5	210	600	..	14	72.5	80	122,438	91,829	30,609	1 25	
Oglesby Coal Co.	155	166	60	14	227	8	1	4	*70	*77.5	97,547	82,151	15,396	1 40	
Union Coal Co.	216	237	90	7	245	..	..	7	*70	*77.5	149,228	122,496	36,732	1 45
James Cahill.	155	190	45	10	240	..	..	2	*70	*77.5	95,000	84,000	11,000	1 45
Nelson Plumb.	150	160	40	..	220	700	1	..	72.5	80	78,485	63,485	15,000	1 25	
Howe & Co.	65	130	28	3	260	130	..	..	72.5	80	57,221	45,781	11,440	1 35
Emerson Hakes.	80	94	8	4	213	..	..	..	90	90	50,000	40,000	10,000	1 50
Standard Co.	42	60	8	..	301	160	..	..	95	95	12,037	10,799	1,238	1 60
Mars. Power Co.	30	36	4	..	300	3	..	..	*1 00	*1 00	12,000	12,000	..	1 50
J. L. Drake.	8	12	3	..	160	..	..	..	1 00	1 00	4,000	3,600	400	2 00
Acme Coal Co.	25	32	4	..	150	200	..	..	72.5	80	5,719	4,419	1,300	1 40
W. B. Scott.	6	12	1	..	160	30	..	..	80	80	2,500	2,100	400	1 50
Goodmanson & D.	15	26	5	..	213	40	..	..	*65	*67.5	8,571	7,372	1,199	1 05
Price & Jones.	14	32	5	..	201	100	..	..	72.5	80	10,350	7,400	2,950	1 40
Nelson & Wrband	6	12	1	..	200	36	..	..	75	80	5,511	4,965	546	1 50
Peter Ryan.	5	10	2	..	175	25	3	..	77.5	85	2,340	2,000	340	1 60	
Cagnelin & Co.	5	8	1	..	125	16	..	..	80	85	1,600	1,500	100	1 60
S. C. McClairy.	3	4	5	..	240	20	1	..	75	80	2,300	2,100	200	1 50	
E. C. Bils.	7	8	..	..	160	20	..	..	80	80	2,060	1,800	260	1 50
William Lawton.	3	5	1	..	175	10	..	..	80	80	975	900	75	1 50
William Kirnes.	4	8	2	..	140	6	..	..	80	80	1,129	968	160	1 60
M. Baldwin.	2	2	..	..	140	3	..	..	80	80	400	350	50	1 30
Totals.	2,152	2,625	784	84	..	5,025	8	59	..	..	1494,826	1242,566	252,260	..
Averages. ....	..	..	..	..	211	..	..	..	\$0 746	\$0 812	..	..	..	\$1 35

* Miners paid for gross weight, average for summer \$0.70.4; winter, \$0.77.9.

† Miners paid by the day.

‡ For lump coal.

Livingston County, 1893—Concluded.

Chi., Wil. & Ver. No. 3	390	400	130	12	214	1,750	1	6	\$0 72.5	\$0 80	280,090	210,068	70,022	\$1 25
Pleasant Hill C. Co.	80	92	29	..	200	275	1	..	* 60	* 60	40,954	30,954	10,000	1 25
Richard Evans.	50	65	15	10	201	230	..	..	72.5	80	36,507	25,566	10,941	1 30
Samuel Simpkins.	70	90	18	4	144	193	1	..	72.5	80	35,000	27,000	8,000	1 27
Smith, Hill & Co.	15	35	8	..	243	1,400	..	..	77.5	85	16,989	9,967	7,022	1 50
Barrackman & Son	100	110	25	12	219	270	..	..	72.5	80	55,000	38,750	16,250	1 45
Lukins & Cavanagh	40	50	18	2	150	190	..	..	72.5	80	24,500	17,000	7,500	1 20
Walton Bros.	30	45	15	..	270	1,627	..	..	* 50	* 50	25,870	20,870	5,000	1 40
Fairbury Coal Co.	12	12	9	1	230	710	..	..	80	80	13,516	8,770	4,746	1 30
Streator Clay M. Co.	8	8	5	..	312	80	..	..	..	..	6,100	6,100	..	1 15
Thos. Edwards.	4	10	..	..	200	60	..	..	1 00	1 00	4,000	4,000	..	2 00
John Marshall.	10	12	3	..	100	40	..	..	72.5	80	2,500	2,000	500	1 25
Alex. Bergren.	4	8	1	..	175	10	..	..	72.5	80	1,150	1,000	150	1 35
Munroe & Son.	2	2	1	1	110	2	..	..	75	80	340	325	15	1 40
Totals.	815	939	268	42	..	6,837	3	6	..	..	542,516	402,370	140,146	..
Averages. ....	..	..	..	..	..	196.3	..	..	\$0 73.2	\$0 80.3	..	..	..	\$1 2

* Miners paid for gross weight, average price \$0.56.1.

† For lump coal.

Will County—First District—1893.

Name of firm, company or person operating mine.	Town or postoffice nearest the mine.	CHARACTER OF PLANT.										Estimated number of acres worked out during the year.
		Drift, Slope, Shaft.	Power — Steam, Horse or Hand.	Shipping or Local mine.	Hand or Machine mine.	Long-wall or Pillar-and-Room.	Old, New or Abandoned mine.	Paid weekly semi-monthly or monthly.	Depth below the surface—feet.	Thickness of seam—feet and inches.	Geological number of seam.	
Chi., Wil. & Ver. C. Co. N	Braidwood	Sh.	St.	S.	H.	L.	A.	S.	54	3	2	19.7
Coöperative Coal Co.....	"	Sh.	St.	S.	H.	L.	A.	S.	52	2.10	2	1.16
William Mally.....	"	"	"	"	"	"	"	"	55	2	2	.7
Totals (3 mines).....												21.56
Averages.....												

Recapitulation of Coal Mines by Counties—

COUNTIES.	MINES.						MINERS.									
	Number of mines.	Shipping mines.	Mines in local trade.	New mines.	Abandoned mines.	Estimated number of acres worked out during year.	No. of miners and other employes.				Average number of running days.	Number of kegs of powder used.	Cas-ualties.			
							Average No. of miners.	Highest No. of miners.	No. of other employes.	No. boys un-der ground.			Killed.	Widows.	Children.	Injured.
Grundy	24	12	12	4	3	253.21	2,237	2,884	760	53	205.3	1,569	6	5	23	71
Kankakee	2	1	1	..	..	23.9	184	207	77	6	170	5	..	..	..	6
LaSalle	28	15	13	4	4	278.4	2,152	2,625	784	84	211.5	4,895	8	1	9	59
Livingston	14	9	5	2	2	99.8	815	939	268	42	196.3	6,837	3	4	8	5
Will	3	1	2	1	1	21.56	205	242	45	2	200	..	..	..	..	4
Totals.....	71	38	33	11	10	676.87	5,593	6,897	1,934	187	.....	13,306	17	10	40	146
Averages .....	..	..	..	..	..	.....	.....	.....	.....	.....	204.8	.....	..	..	..	...

Whole number of openings reported in 1892, 70.

Number of new mines or places opened during the year, 11.

Number of mines exhausted or abandoned during the year, 10.

Whole number of openings reported for 1893, 71.

Handwritten calculations:

2152
 780

 2832
 2832

 290

154
 72

 226
 226

 290

Will County, 1893—Concluded.

Name of firm, company or person operating the mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.											Av. value of lump coal per ton at the mine.		
	Miners employed.		All other employes.	Boys employed under ground.	Running days in the year.	Kegs of powder used during year.	Casualties.		Prices paid per ton for hand mining		Tons of coal mined.			
	Av. during the year.	Highest during year.					Killed.	Injured.	Summer.	Winter.	Total.		Lump coal.	Oth'r grades.
C., W. & V. Co. N. Coöperative Co.	190	218	42	1	192	.....	..	4	\$0 87.5	\$0 95	77,125	74,159	2,966	\$1 25
William Mally	12	20	1	...	208	.....	..	..	1 10	1 10	4,300	3,500	800	2 00
	3	4	2	1	*95	.....	..	..	1 10	1 10	300	275	25	2 00
Totals	205	242	45	2	419	.....	..	4	.....	.....	81,725	77,934	3,791	.....
Averages .....	.....	.....	.....	.....	200	.....	..	..	\$0 88.6	\$0 95.7	.....	.....	.....	\$1 28

* Not included in average days.

First Inspection District, 1893.

COUNTIES.	PRICES AND PRODUCTS.						Average value of lump coal per ton at the mine.	Average value of other grades per ton.	Aggregate value of total products.
	Average prices for hand-mining.			Tons of coal mined.					
	Sum-mer.	Win-ter.	Av'r'ge for the year.	Total tons.	Tons of lump.	Tons of other grades			
Grundy.....	\$0.882	\$0.955	\$0.931	1,186,919	1,106,574	80,345	\$1.317	\$0.223	\$1,475,785
Kankakee.....	0.878	0.951	0.927	88,700	83,700	5,000	1.414	1.02	119,480
LaSalle.....	0.748	0.812	0.79	1,494,826	1,242,566	252,260	1.358	0.366	1,779,801
Livingston.....	0.732	0.803	0.779	542,516	402,370	140,146	1.293	0.335	567,454
Will.....	0.886	0.957	0.933	81,725	77,934	3,791	1.286	0.229	101,118
Totals				3,394,686	2,913,144	481,542	.....	.....	\$4,043,638
Averages.....	*\$0.8206	*\$0.8911	*\$0.8681	.....	.....	.....	\$1.333	\$0.343	.....

* For screened coal average price for hand mining, gross weight, summer, \$0.6925; winter, \$0.7642.

SECOND INSPECTION DISTRICT---1893.

MR. GEORGE A. SCHILLING,

Secretary of the Bureau of Labor Statistics, Springfield, Ill.

SIR:—In accordance with section twelve of an act of the General Assembly, defining the duties of State Inspectors of coal mines, and providing for the health and safety of persons employed in the coal mines of Illinois, I have the honor of herewith submitting the tenth annual report of coal mines in the Second Inspection District, for the year ending July 1, 1893.

The tabular part of this report contains the number of mines in the district—local and commercial; their depth below the surface; the geological number and thickness of the various seams; the estimated number of acres of coal worked out during the year; the number of miners and other employes engaged in the mining industry; the number of days each mine was in operation; the number of kegs of powder consumed; the number of accidents—fatal and non-fatal—that have occurred during the year; the number of tons of lump and other grades of coal produced; the prices per ton paid for mining; the average value of lump coal per ton at the mine and the aggregate value of the total product.

In the text is given an account of the fatal accidents in detail; the number and location of new mines—of the commercial class—that have been opened and gone into operation during the year, and the number of mines of a similar class that have been worked out and abandoned. Many small local openings are commenced each year, and others abandoned, but no accurate record is kept of the number, the product of such mines being so small it is not thought necessary to present in the text of a report of this kind the number commenced and abandoned each year.

The following summary of coal produced, miners and others employed, accidents and ratios is presented for the year:

Number of mines—shipping	27
Number of mines—local	197
Total number of mines	224
Number of miners employed—highest.....	4,443
Other employes, including 105 boys under 14 years.....	1,351
Total number of employes	5,794
Number employed above ground	745
Number employed under-ground	5,049

Number of kegs of powder consumed.....	15,698
Estimated number of acres worked out.....	470.1
Tons of coal produced—lump.....	1,708,909
Tons of coal produced—other grades.....	291,755
Total product	2,000,664
Number of accidents—fatal	5
Number of accidents—non-fatal.....	72
Total number of accidents	77
Number of employes to each fatal accident	1,159
Number of employes to each non-fatal accident.....	80
Tons of coal produced to each fatal accident.....	400,133
Tons of coal produced to each non-fatal accident	27,787
Tons of coal produced to each employé	345

Coal production by counties, with increase or decrease in each, for the years ending July 1, 1892 and 1893.

Counties.	TOTAL OUTPUT OF LUMP COAL—IN TONS.		Increase, tons.	Decrease, tons.
	1892.	1893.		
Bureau	809,009	976,572	167,563	.....
Hancock	5,380	5,060	.....	320
Henry.....	142,762	148,324	5,562	.....
Knox.....	43,137	49,808	6,671	.....
Marshall.....	64,276	78,700	14,424	.....
McDonough.....	82,001	92,096	10,095	.....
Mercer.....	23,244	273,390	40,146	.....
Rock Island.....	34,017	34,658	41	.....
Schuyler.....	13,685	15,955	2,270	.....
Stark.....	22,349	23,070	721	.....
Warren.....	11,364	11,876	512	.....
Totals.....	1,461,224	1,708,909	248,005	320
Increase			248,005	
Decrease.....			320	
Net increase			247,685	

The Counties of Bureau, Henry, Knox, Marshall, McDonough, Mercer, Rock Island, Schuyler, Stark and Warren show a gain of 248,005 tons, and the county of Hancock a loss of 320 tons, leaving a net increase for the year of 247,685 tons of lump coal.

Comparative table of accidents, employés and output, with ratios, for ten years ending July 1, 1893.

Year.	Number killed.	Number injured.	Total killed and injured.	Total number of employés.	Number of employés to each fatal accident.	Number of employés to each non-fatal accident.	Total number of tons of lump coal produced.	Number of tons produced to each fatal accident.	Tons produced to each non-fatal accident.	Tons produced to each accident, fatal and non-fatal.	Tons produced to each employé.
1884.....	6	19	25	3,616	602	190	728,146	121,357	38,323	29,125	201
1885.....	2	31	33	3,391	1,695	109	724,077	362,038	23,357	21,941	213
1886.....	6	23	29	3,599	600	164	701,723	117,454	32,032	25,168	195
1887.....	5	26	31	4,068	813	156	1,069,027	313,805	41,116	34,485	262
1888.....	5	34	39	4,914	983	144	1,293,187	258,637	38,035	33,158	268
1889.....	3	29	32	4,498	1,499	155	1,087,848	362,616	37,512	33,995	241
1890.....	5	39	44	4,099	820	105	1,042,600	200,520	25,708	22,786	244
1891.....	4	58	62	5,089	1,272	88	1,215,833	303,971	20,963	19,611	239
1892.....	1	54	55	4,865	4,096	76	1,461,224	1,461,224	27,060	26,568	294
1893.....	5	72	77	5,794	1,159	80	1,708,909	341,782	23,735	22,194	295
Totals.....	42	384	426	.....	.....	.....	.....	.....	.....	.....	.....
Averages.	4.2	38.4	42.6	4,393.3	1,353.9	126.7	1,099,562.4	384,340.4	30,784.1	26,903.1	244.7

Strikes.—The year ending July 1, 1893, has been one of comparative quiet; so far as strikes or labor troubles are concerned it has been a local twelve months era of "peace on earth," there being only one exception—and that of minor importance. The miners—about 200 in number—in the employ of the Quincy Coal Company at Colchester, McDonough county, came out on strike March 16, 1893. *Cause:* The company notified them that it was about to return to the monthly pay system, and that the company could no longer pay 25 cents per ton for slack; the miners resented this and suspended work; at the end of 15 days suspension the matter ended in a compromise: the miners to be paid weekly, but not paid for slack, which makes a reduction of wages of about 1½ per cent.

New Mines opened.—The following mines, of the shipping class, have gone into operation during the year:

Shafts No. 34, 35 and 36, all operated by the Quincy Coal Co. at Colchester, McDonough county.

Mines Worked out and Abandoned.—The following mines of the shipping class have been worked out and abandoned during the year:

Shaft No. 10, operated by the Herdien Coal Company at Galva, and the mine operated by the Briar Bluff Coal Company at Briar Bluff, Henry county; shaft No. 33, operated by the Quincy Coal Co., and shaft No. 2, operated by the Egerton Coal Company, both at Colchester, McDonough county.

Improvements.—Many improvements and additions have been made at the larger mines from year to year, looking towards increasing the output and handling the coal more economically. The most expensive improvements made during the year have been at Spring Valley, Wenona and Cable; at Spring Valley a new and improved first motion winding engine has been put in at mine No. 1. At Wenona the Coal Company has put in a very

complete system of tail-rope haulage, the length of the engine-plane being about 2,500 feet. At Cable the Coal Valley Mining Company has extended the length of the engine-plane at its slope mine, and sunk a new air-shaft near the face of the workings. This latter improvement will very materially increase the amount of air in circulation by decreasing the length of the air-ways.

Future Prospects.—For the year ending July 1, 1884, the number of tons of lump coal produced in this district was 728,146, and for the year ending July 1, 1893, 1,708,909 tons of lump coal were mined; this is an increase of nearly 135 per cent in ten years, and the end is not yet.

At Toluca, Marshall county, the Atchison, Topeka & Santa Fé Railroad Company has secured a large tract of coal land on the line of its road; one shaft has been completed and the hoisting machinery is being put in position, while other shafts are being sunk. This company will probably be producing coal early in November, 1893.

In Mercer county two new shafts have been sunk and will likely be in active operation by November; one by Hill Bros. at Cable, the other by the Empire Coal Company at Gilchrist.

A very respectable increase in the output of the Bureau county mines may also be expected, as the mines at Spring Valley, Ladd, Seatonville and Loceyville have not yet reached their maximum capacity.

Fatal Accidents.—September 1, 1892. Charles Ericson, a miner, age 46 years, was killed instantly by a heavy fall of roof at the face of his working room in the Briar Bluff Coal Company's mine, at Briar Bluff, Henry county. A large rock—9 feet long, 6 feet wide and about 2 feet thick, cut on all four sides by a "mud seam"—fell on him while mining out a "standing shot;" he was working alone, and was dead when found.

September 2, 1892.—Ignatz Yeager, employed as a water-bailer, age 72 years, a widower, was killed instantly by a fall of roof while in the act of dipping water from a sump at the face of a working room in the Coal Valley Mining Company's mine, at Cable, Mercer county.

December 6, 1892.—James Verando, a miner, age 32 years, single, had his leg severely crushed by a fall of coal at the face of his working room in shaft No. 1, operated by the Spring Valley Coal Company, at Spring Valley, Bureau county. Fatal results were not expected in this case, but complications arose, and Verando died 14 days after the accident.

January 16, 1893.—Frederick Peterson, a driver, age 26 years, single, was killed by falling from a bridge at the outside of Hodgett Bros'. mine, located at Sheffield, Bureau county.

This is a drift mine. Peterson was employed as a driver, hauling the coal from the face of the workings to the tipple or dump, which is located a considerable distance from the mouth of the drift. The ground rises from the mouth of the drift to the dump, causing quite a gradient. Near the opening to the drift, and at right angles to it, flows a creek, bridged

by trestle work over which the coal is hauled; it was customary for Peterson, after the loaded car was dumped, to get inside the empty car and brake it down to the drift mouth. On this occasion, however, the car ran too fast, and when on the bridge jumped the track and ran over, carrying Peterson with it. He fell a distance of about 25 feet, striking on his head on the ice below. Death was instantaneous.

April 3, 1893.—Emil Rhinehart, age 36 years, married, leaves a widow and four children, was killed instantly by falling down shaft No. 3, operated by the Spring Valley Coal Company, at Spring Valley, Bureau county.

Rhinehart was employed as a company man and working on the night shift in this mine. He had finished his work for the night and with three companions was being hoisted out of the mine. When opposite the upper or main landing, the cage still in motion, Rhinehart stepped off, and in some manner slipped under the cage and down the shaft, falling a distance of about 500 feet.

Fatal Casualties—Second District—1893.

Date.	Name.	Age.	Occupation.	Residence.	Married.	Widow.	Children.	Single.	Dependents.	Cause of Accident.
1892.										
Sept. 1	Charles Ericson.....	46	Miner.....	Briar Bluff..	..	..	..	1..		Falling rock.....
Sept. 2	Ignatz Yeager	72	Water bailer	Cable .....	..	..	..	1..		Falling rock.....
Dec. 6	James Verando	32	Miner.....	Spr'g Valley ..	..	..	..	1..		Falling coal
1893.										
Jan. 16	Frederick Peterson.	26	Driver	Sheffield....	..	..	..	1..		Falling from bridge above ground.....
April 3	Emil Rhinehart	36	Co. man....	Spr'g Valley	1	1	4	..	5	Falling down shaft ..
	Totals.....		.....	.....	1	1	4	4	5	

RECAPITULATION OF FATAL ACCIDENTS.

Residence.	No.	Occupation.	No.	Cause.	No.	Colliery.	No.
Briar Bluff	1	Companyman	1	Falling coal	1	Briar Bluff Coal Co	1
Cable	1	Driver	1	Fall. down shaft..	1	Coal Valley Min.Co	1
Sheffield	1	Miners.....	2	Falling off bridge.	1	Hodgett Bros.....	1
Spring valley..	2	Water bailer..	1	Falling rock.....	2	Spring Valley C.Co	2
Totals.....	5	.....	5	.....	5	.....	5

Four of these deaths were instantaneous, one lived 14 days. One was a married man, 4 were single.

Non-Fatal Casualties—Second District—1893.

Date.	Name.	Age.	Residence.	Married.	Children.	Single.	Dependents.	Character of Injury and Cause of Accident.	Time lost, days.
1892.									
July 2	Eric Carlson	29	Cable	1	1	1	1	Foot injured with coal-pick	4
" 5	Ed. Russell	34	Briar Bluff	1	1	1	2	Arm broken by falling roof	70
" 7	Ludwig Sward	30	Cable	1	1	1	2	Leg bruised by falling coal	11
" 15	William Burnell	54	Sp'g Valley	1	8	1	9	Hip fractured by falling coal	90
" 19	John Mulligan	30	Sp'g Valley	1	1	1	1	Foot crushed by pit-car	10
" 23	Robert Pat erson	53	Sp'g Valley	1	13	1	14	Rib fractured by falling roof	10
" 29	John Johnson	22	Sp'g Valley	1	1	1	1	Body squeezed by pit-car	5
" 30	Anton Dunn	30	Sp'g Valley	1	1	1	1	Head cut by pit-car	4
" 30	John Hestem	42	Ladd	1	1	1	1	Shoulders bruised by falling coal	42
Aug. 2	William Hirlgust	15	Sp'g Valley	1	1	1	1	Leg bruised by pit-car	24
" 14	Simon Obermiller	36	Wenona	1	4	1	5	Leg bruised by falling roof	32
" 16	John Thompson	26	Ladd	1	1	1	2	Back bruised by falling roof	27
" 27	Frank Devert	34	Ladd	1	1	1	1	Ribs fractured, falling from scaffolding	15
Sept. 1	Anthony Tasha	23	Wenona	1	1	1	2	Leg broken by falling roof	63
" 6	Henry Harvin	35	Sp'g Valley	1	1	1	1	Leg broken by falling coal	60
" 25	Robert Penman	21	Colchester	1	1	1	1	Head cut by falling roof	30
Oct. 4	George Jones	23	Cable	1	1	1	1	Body bruised by falling roof	30
" 8	Frank Lavendusky	30	Sp'g Valley	1	1	1	2	Head cut by falling roof	4
" 10	Adolph John	35	Sp'g Valley	1	2	1	3	Leg broken by falling roof	60
" 10	George Hallet	24	Sp'g Valley	1	1	1	1	Ankle broken by falling coal	30
" 19	William Williams	14	Ladd	1	1	1	1	Arm broken by falling on track	25
" 19	E. Frankley	27	Sp'g Valley	1	1	1	1	Toe mashed by falling coal	6
" 26	Frank Snyder	40	Sp'g Valley	1	2	1	3	Leg broken by pit-cars	60
" 28	Gus Mizell	15	Sp'g Valley	1	1	1	1	Body squeezed between pit-cars	5
Nov. 1	Charles Kear	23	Sparland	1	1	1	1	Leg broken by falling roof	60
" 3	C. J. Anderson	40	Galva	1	3	1	4	Body injured by rapid descending cage	10
" 3	Peter Strum	33	Galva	1	3	1	4	Body injured by rapid descending cage	10
" 15	Lyman Smith	26	Sheffield	1	1	1	2	Back injured by falling roof	*
" 19	John Golden	16	Ladd	1	1	1	1	Body bruised by falling into a hole, above ground	14
" 21	Charles Plummer	39	Cable	1	3	1	4	Leg bruised by falling coal	30
" 23	Albert Adams	17	Ladd	1	1	1	1	Leg bruised, caught by pit-car	3
" 29	Joseph Marco	30	Sp'g Valley	1	1	1	1	Leg broken by falling roof	90
Dec. 3	John Bernosky	35	Sp'g Valley	1	1	1	1	Ankle bruised by falling coal	6
" 3	Joseph Struble	33	Sp'g Valley	1	1	1	1	Hand bruised between R. R. cars	3
" 7	F. Meelish	27	Wenona	1	1	1	1	Foot bruised by falling roof	14
" 7	J. Meelish	18	Wenona	1	1	1	1	Leg bruised by falling roof	7
" 29	Thos. Rangouas	29	Ladd	1	1	1	1	Rib broken by pit-car	13
1893.									
Jan. 2	Ray Billingsley	21	Ray	1	1	1	1	Leg bruised by falling roof	30
" 4	John Ninintus	24	Sp'g Valley	1	1	1	2	Hand crushed by R. R. car	30
" 8	Jonas Nelson	23	Victoria	1	1	1	1	Leg broken by falling roof	80
" 13	George Kear	26	Sparland	1	2	1	3	Leg broken by falling roof	33
" 14	Joseph Bradley	42	Loceville	1	5	1	6	Back bruised by falling coal	12
" 15	John Ryan	15	Sp'g Valley	1	1	1	1	Leg bruised by pit-car	20
" 17	John Pattieson	50	Sp'g Valley	1	4	1	5	Leg bruised by falling coal	30
" 19	William Carson	28	Wenona	1	1	1	1	Leg bruised, kicked by a mule	4
" 20	Wm. Dovenspike	26	Wenona	1	1	1	1	Foot crushed by falling roof	35
" 20	Dominick Riva	47	Sp'g Valley	1	2	1	3	Leg broken by falling coal	70
" 23	Thos. McCormick	26	Sp'g Valley	1	1	1	1	Foot bruised by pit-car	10
" 31	William Hocking	30	Seatonville	1	1	1	1	Back bruised bet. cage & side sh'ft	18
Feb. 10	William Pryor	32	Seatonville	1	1	1	2	Collar-bone broken by pit-car	30
" 18	Henry Blumm	16	Sp'g Valley	1	1	1	1	Knee dislocated jump'g off pit-car	20
" 21	Andrew Urlick	21	Sp'g Valley	1	1	1	1	Head cut by pit-car	5
" 28	Egnus Peter	50	Sp'g Valley	1	7	1	8	Leg broken by falling coal	40
Mch. 1	F. Kruger	34	Wenona	1	3	1	4	Shoulder crushed by falling roof	45
" 6	Peter Larson	53	Galva	1	3	1	4	Eye put out, sulphur flying from pick	70
" 18	Peter Pearson	23	Ladd	1	1	1	1	Two fingers broken by falling roof	21
" 29	Henry Blumm	16	Sp'g Valley	1	1	1	1	Leg broken by pit-car	60
" 30	Frank Flow	20	Sp'g Valley	1	1	1	1	Head cut, kicked by a mule	14
Apr. 10	Charles Ott	59	Ladd	1	1	1	1	Leg broken, struck by pit-car	85
" 10	J. M. Flick	38	Ladd	1	2	1	3	Arkle crushed by falling roof	40
" 11	Louis Lind	45	Galva	1	10	1	11	Leg broken by falling coal	80
" 26	John Osborn	35	Sp'g Valley	1	1	1	2	Collar-bone broken by pit-car	50
May 27	Andrew Fulton	35	Sp'g Valley	1	3	1	4	Leg bruised by falling roof	14
" 30	Abraham Lonsdale	60	Loceville	1	2	1	3	Back bruised by falling coal	24
" 31	Anton Keiser	27	Sp'g Valley	1	1	1	1	Leg bruised by falling coal	10

Non-Fatal Casualties—Second District—Concluded.

Date.	Name.	Age.	Residence.	Married.	Children.	Single.	Dependents.	Character of Injury and Cause of Accident.	Time lost—Days.
June 1	Anthony Gavin	33	Ladd.....	1	4	..	5	Back bruise'd. coal fall'g d'wn sh'ft	7
" 5	Patrick Fagan	21	Loceyville..	..	1	..	1	Leg broken by pit-cars	+
" 5	Fred Foster.....	20	Colchester..	..	1	..	1	Back bruised by falling roof	25
" 12	George Heathcock	48	Princeton...	1	2	..	3	Foot crushed by falling coal	15
" 20	Andrew Prossitis..	24	Sp'g Valley.	1	1	..	2	Ribs broken by falling roof.....	20
" 21	John Atkins.....	40	Sp'g Valley.	1	1	..	2	Leg broken by falling coal	60
" 21	Michael Belak.....	40	Sp'g Valley.	1	3	..	4	Arm bruised between pit-cars...	6
Totals—Injured, 72				35	101	37	138		†

* Permanently injured.

† Not yet recovered from his injuries.

‡ An average of 30 days lost time to the 70 men reported.

RECAPITULATION OF NON-FATAL CASUALTIES.

Residence.	No.	Occupation.	No.	Cause of Accident	No.	Colliery.	No.
Briar Bluff.....	1	Cager.....	1	C'ge & side of sh't	1	Briar Bluff C. Co..	1
Cable	4	Carpenter	1	C'ge strik'g bot'm	2	Coal Valley M. Co..	4
Colchester.....	2	Drivers.....	15	Coal fall'g d'n sh't	1	Chi., W. & V. C. Co.	5
Galva	4	Laborers	3	Falling coal	17	Cumming & Co.....	2
Ladd	11	Miners	47	Fall'g fr'm scaffold	1	Gray Eagle C. Co..	1
Loceyville	3	Mine owner..	1	Falling in hole....	1	Heathcock, George	1
Princeton.....	1	Trappers ...	4	Falling roof	24	Herdian Coal Co...	3
Rav	1			Falling on track...	1	Lloyd, H. W.....	1
Seatonville ...	2			Kicked by mules	2	Porter, Rufus.....	1
Sheffield	1			Pit-cars	18	Quincy Coal Co...	2
Sparland	2			Railroad cars	2	Spring Valley C. Co.	32
Spring Valley ..	32			Struck by pick...	1	Stoneberg, Eric...	1
Victoria.....	1			Sulph'r from pick	1	Wenona Coal Co...	7
Wenona.....	7					Whitebreast F. Co.	11
Totals	72		72		72		72

Table showing the number of persons injured, nature of injuries, time lost, with averages and percentages.

Nature of Accident,	No.	Married.	Single.	Dependents.	TIME LOST.		Percentage of injuries.
					Total days.	Average days.	
Ankle broken	1	.....	1	.....	30	30	1.39
Ankles injured.....	2	1	1	3	46	23	2.78
Arms broken.....	2	1	1	2	95	47.5	2.78
Arms injured.....	1	1	.....	4	6	6	1.39
Backs injured	*7	5	2	19	113	19	9.7
Bodies injured.....	6	2	4	8	74	12.3	8.33
Collar-bones broken	2	2	.....	4	80	40	2.77
Eye put out.....	1	1	.....	4	70	70	1.39
Feet injured.....	6	1	5	3	88	14.7	8.33
Hands injured.....	3	1	2	2	54	18	4.15
Heads injured.....	5	2	3	3	57	11.4	7
Hip injured.....	1	1	.....	9	90	90	1.39
Knee dislocated.....	1	.....	1	.....	20	20	1.39
Legs broken	15	8	7	36	901	60	20.83
Legs injured	12	5	7	20	215	18	16.66
Ribs broken	4	2	2	16	58	14.5	5.54
Shoulders injured	2	1	1	4	87	43.5	2.77
Toes injured.....	1	1	.....	1	6	6	1.39
Totals	72	35	37	138	2,090	30	100.00

* One permanently disabled; one unable to work at this date.

*Recapitulation of Fatal Accidents, by causes, for ten years
ending July 1, 1893.*

Causes.	Total	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	Per cent.
Falling coal and roof.....	20	5	....	3	3	1	1	1	2	1	3	47.60
Cages and machinery above ground ..	2	1	....	....	....	....	....	1	....	....	....	4.76
Cages, pit-cars and machinery under-ground.....	6	....	....	2	1	3	....	....	....	....	....	14.29
Premature blasts.....	2	....	....	1	....	....	1	....	....	....	....	4.76
Falling down shafts and slopes	4	....	1	....	1	....	1	....	....	....	1	9.53
Coal or other material falling down shaft.....	3	....	....	....	....	1	....	....	2	....	....	7.15
Inhaling or exploding mine gases.....	4	....	1	....	....	....	....	3	....	....	....	9.53
Miscellaneous causes	1	....	....	....	....	....	....	....	....	....	1	2.38
Totals	42	6	2	6	5	5	3	5	4	1	5	100.00

*Recapitulation of Non-Fatal Accidents, by causes, for ten years
ending July 1, 1893.*

Causes.	Total	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	Per cent.
Falling coal and roof.....	249	14	19	11	23	27	21	24	33	36	41	64.84
Cages and machinery above ground ..	9	....	....	1	....	1	1	....	....	4	2	2.35
Cages, pit-cars and machinery under-ground.....	74	3	5	3	1	3	4	8	15	11	21	19.27
Premature blasts and explosions of powder.....	13	2	4	1	....	....	1	2	1	2	..	3.39
Falling down shafts and slopes	8	....	....	4	....	3	....	....	1	....	....	2.08
Miscellaneous causes	31	....	3	2	2	....	2	5	8	1	8	8.07
Totals	384	19	31	22	26	34	29	39	58	54	72	100.00

The following are the tabular statements for each mine in the eleven coal producing counties of the district.

Respectfully submitted,

THOMAS HUDSON,

State Inspector Second District, Galva, Ill.

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Bureau County, 1893—Concluded.

Name of firm, company or person operating mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.														Av. value of lump coal per ton at the mine.
	Miners employed.		All other employes.	Boys employed under ground.	Running days in the year.	Kegs of powder used during year.	Casualties.		Prices paid per ton for hand mining		Tons of coal mined.				
	Av. during the year.	Highst during year.					Killed.	Injured.	Summer.	Winter.	Total.	Lump coal.	Oth'r grades.		
S. Vall'y C. C. No. 1	415	437	176	6	245	1	12	*\$ 70	*\$ 77.5	260,811	222,504	38,307	\$1 42	
" No. 2	357	410	159	4	238	9	9	*70	*77.5	173,709	149,894	23,815	1 42	
" No. 3	365	390	128	4	245	1	8	*70	*77.5	220,167	176,129	44,033	1 42	
" No. 4	165	175	82	2	166	3	11	*70	*77.5	94,618	78,189	16,429	1 42	
Whitebr'st Co.(B).	201	248	99	7	274	11	82½	90	90	147,771	125,700	22,071	1 40	
C. M. & V. Coal Co	200	210	84	4	229	2	82½	90	90	117,593	104,068	13,525	1 35	
	150	175	55	5	186	....	3	82½	90	85,474	76,961	8,513	1 35	
Sheffield Min. Co..	50	60	5	....	325	72	....	87½	87.5	22,314	22,314	....	1 75
Hodgett Bros.....	11	13	1	....	260	6	1	87½	87.5	4,446	4,446	....	2 00
H. W. Lloyd.....	8	12	1	....	220	8	1	87½	87.5	2,750	2,750	....	2 00
P. Duncan.....	4	6	1	....	180	....	....	87½	87.5	950	950	....	1 75
Joseph Fleming...	4	5	1	....	110	4	....	87½	87.5	550	550	....	2 00
John Duncan.....	3	4	1	....	150	....	....	87½	87.5	470	470	....	2 00
W. H. Forrest.....	7	10	1	....	280	40	....	87½	87.5	1,944	1,944	....	1 75
H. W. Lloyd.....	5	8	1	....	225	....	....	75	75	1,350	1,350	....	1 50
Silas Riley.....	4	7	1	....	160	5	....	1 00	1 00	566	566	....	1 75
G. Heathcock.....	9	11	2	....	216	150	1	1 00	1 00	4,385	4,385	....	1 75
A. W. Walton.....	8	10	1	....	250	115	....	1 00	1 00	3,402	3,402	....	1 75
Total	1,966	2,191	799	32	...	400	3	50	1,143,270	976,572	166,698	
Averages	220	\$0 834	\$0 899	\$1 42	

* Miners paid for gross weight.

† Lump coal.

Hancock County, 1893—Concluded.

Augusta Coal Co..	12	16	1	....	215	....	....	\$1 00	\$1 12.5	3,120	3,120	....	\$1 56
Jacob Marks.....	4	7	1	....	180	....	....	1 00	1 25	1,100	1,100	....	1 75
Paddy Doyle.....	3	5	....	....	160	....	....	1 00	1 25	640	640	....	1 75
J. S. Boyd.....	3	3	1	....	*50	....	....	....	1 25	200	200	....	1 75
Total	22	31	3	....	....	....	....	....	....	5,060	5,060	....	....
Averages ....	....	....	....	....	185	....	....	\$1 00	\$1 17.4	....	....	....	\$1 63

* Omitted from average days.

Henry County—Second District—1893—Concluded.

Name of firm, com- pany or person op- erating mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.														Av. value of lump coal per ton at the mine.
	Miners em- ployed.		All other em- ploys.	Boys employed under ground.	Running days in the year.	Kegs of powder used during year.	Casual- ties.		Prices paid per ton for hand mining.		Tons of coal mined.				
	Av. during the year.	Highest dur- ing year.					Killed.	Injured.	Sum- mer.	Win- ter.	Total.	Lump coal.	Oth'r grades.		
Kewanee Coal Co.	85	105	19	3	285	...	...	...	\$0 80	\$0 80	52,359	47,384	4,975	\$1 40
Tibb'tts & M'Mull'n	18	30	3	...	300	...	...	...	1 00	1 00	7,604	7,604	...	1 75
Bernard Kirley....	13	18	2	...	250	...	...	...	1 00	1 00	4,102	4,102	...	1 75
Matthew Atkinson	5	9	1	...	200	...	...	...	1 00	1 00	2,888	2,888	...	1 75
Bates Bros.....	8	13	3	...	225	...	...	...	1 00	1 00	2,880	2,880	...	1 75
William H. Lyle.....	6	10	2	...	265	...	...	...	1 00	1 00	2,800	2,800	...	1 75
Martin Bros.....	2	7	1	...	275	...	...	...	1 00	1 00	2,020	2,020	...	1 75
Reinold Kempin....	2	5	1	...	295	...	...	...	1 00	1 00	1,196	1,196	...	1 75
Ritka & Peart.....	3	7	1	...	160	...	...	...	1 00	1 00	1,000	1,000	...	1 75
Garland & Dixon...	3	5	...	...	220	...	...	...	1 00	1 00	800	800	...	1 75
Peter Malone.....	2	2	1	...	160	...	...	...	1 00	1 00	678	678	...	1 75
William Lane.....	2	3	1	...	180	...	...	...	1 00	1 00	480	480	...	1 75
Thomas Lester.....	2	2	1	...	180	...	...	...	1 00	1 00	446	446	...	1 75
Thos. Carter & Son	2	2	...	...	60	...	...	...	1 00	1 00	170	170	...	1 75
Herd'n C. Co. No. 9	30	55	6	2	250	...	3	...	80	87.5	16,942	16,242	700	1 45	
No. 10	10	12	4	1	120	...	...	...	80	87.5	3,015	2,865	150	1 45
Gray Eagle C. Co..	40	70	5	...	210	...	1	...	80	80	16,368	16,056	312	1 35	
James H. Murray..	12	21	2	...	280	...	...	1 00	1 00	...	3,680	3,680	...	1 75
Phillip Murphy....	3	4	1	...	120	...	...	...	...	87.5	822	822	...	1 75
Briar Bluff C. Co..	27	33	16	3	275	300	1	1	*60	60	24,209	22,409	1,800	1 35	
Martin Peacock....	2	4	...	...	180	12	...	...	87.5	87.5	720	720	...	1 50
John Mowbray....	8	14	1	...	270	...	...	1 25	1 25	...	3,852	3,852	...	2 00
Elery Riley.....	4	8	1	...	300	...	...	1 25	1 25	...	1,742	1,742	...	2 00
Thomas Frew.....	4	8	1	...	200	...	...	1 25	1 25	...	1,520	1,520	...	2 00
James Kay.....	3	5	1	...	100	...	...	...	1 25	...	480	480	...	2 00
James Fairlie & Co	7	9	3	...	230	195	...	1 25	1 25	...	2,608	2,608	...	2 25	
Smith Hadsell.....	2	3	...	...	120	...	...	...	87.5	...	480	480	...	1 75
Park & Hillier.....	3	3	...	...	80	7	...	...	75	...	400	400	...	1 50
Totals.....	309	467	77	9	...	514	1	5	...	...	156,261	148,324	7,937	.....
Averages .....	...	...	...	...	208	...	...	...	\$0 88.5	\$0 89.8	...	...	...	\$1 52

* Miners paid gross weight.

† Lump coal.

Knox County, 1893—Concluded.

Name of firm, com- pany or person op- erating mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.												Av. value of lump coal per ton at the mine.	
	Miners em- ployed.		All other em- ployes.	Boys employed under ground.	Running days in the year.	Kegs of powder used during year.	Casual- ties		Prices paid per ton for hand mining.		Tons of coal mined.			
	Av. during the year.	High'st dur- ing year.					Killed.	Injured.	Sum- mer.	Win- ter.	Total.	Lump coal.		Oth'r grades.
Brick and Tile Co.	14	16	5	...	300	...	...	...	\$1 18	\$1 18	7,154	7,154	...	\$2 00
Essex & Son.....	12	17	4	2	215	124	...	...	87.5	87.5	3,502	3,502	...	1 50
Ross & Woodward	7	12	1	...	210	...	...	...	87.5	87.5	3,060	3,000	...	1 50
Ben. Lewis.....	4	5	1	...	230	...	...	...	87.5	87.5	1,680	1,680	...	1 50
Patrick Milan....	2	3	1	...	120	...	...	...	87.5	87.5	480	480	...	1 50
Hamilton Taylor..	18	22	2	...	200	...	...	...	75	75	7,000	7,000	...	1 50
James Taylor.....	4	6	1	...	200	...	...	...	75	75	1,480	1,480	...	1 50
William Ostlin....	2	3	...	...	220	...	...	...	75	75	880	880	...	1 50
Olof Stromburg....	2	3	...	...	190	...	...	...	75	75	720	720	...	1 25
Fred Johnson.....	2	2	...	...	200	...	...	...	75	75	600	600	...	1 25
Louis Nodine.....	2	4	...	...	140	...	...	...	75	75	540	540	...	1 25
George Clifford...	8	15	1	...	200	...	...	1 00	1 00	2,600	2,600	...	1 75	
James McGovern..	3	7	1	...	220	...	...	...	87.5	87.5	1,200	1,200	...	1 25
Owen Conley.....	2	3	...	...	170	...	...	...	87.5	87.5	700	700	...	1 25
Charles Morgan...	2	3	...	...	120	...	...	...	87.5	87.5	400	400	...	1 25
Lundeen & Shole'n	11	17	1	...	230	...	...	1 00	1 00	3,428	3,428	...	1 75	
Z. F. Dudley.....	6	8	1	...	200	...	...	1 00	1 00	1,680	1,680	...	1 75	
S. H. Hopper.....	2	3	...	...	140	...	...	1 00	1 00	420	420	...	1 75	
A. S. Haver.....	2	3	...	...	140	...	...	1 00	1 00	420	420	...	1 75	
Anderson & Nels'n	2	2	...	...	120	...	...	1 00	1 00	320	320	...	1 75	
William Fish.....	2	3	...	...	100	...	...	...	75	75	300	300	...	1 25
Eric Harkstrom....	2	2	...	...	90	...	...	...	75	75	240	240	...	1 25
H. T. Patton.....	2	2	...	...	60	...	...	...	75	75	160	160	...	1 25
Bowman Bros.....	5	8	1	...	210	...	...	...	75	75	2,020	2,020	...	1 50
Lafayette Dalton..	4	6	1	...	180	...	...	...	75	75	1,424	1,424	...	1 50
Isam Dalton.....	3	5	1	...	170	...	...	...	75	75	920	920	...	1 50
John Walsh.....	5	8	1	...	210	...	...	...	75	75	2,480	2,480	...	1 25
David Murphy.....	2	2	...	...	60	...	...	...	75	75	220	220	...	1 25
G. W. Etcheson...	2	2	...	...	100	...	...	...	1 00	300	300	300	...	1 50
A. L. King.....	4	6	1	...	100	...	...	...	75	75	600	600	...	1 50
William Aten.....	2	3	1	...	80	...	...	...	75	75	240	240	...	1 50
Eric Stromberg....	1	1	...	...	70	...	1	...	75	75	240	240	...	1 25
Seven s'r'ce mines	14	17	...	...	100	...	...	...	75	75	2,460	2,460	...	1 25
Totals	156	220	25	2	...	124	1	...	...	...	49,808	49,808	...	...
Averages.....	...	...	...	...	162.3	...	...	...	\$0 89.8	\$0 88	...	...	...	\$1 57

Marshall County—Concluded.

Wenona Coal Co...	125	150	34	4	256	14	7	\$0 90	\$0 90	68,260	56,000	12,260	\$1 65
Cumming & Co....	50	60	14	...	270	...	2	* 70	* 77.5	20,128	18,944	1,184	1 45
George Crisman...	2	3	...	...	180	9	...	87.5	87.5	580	580	...	1 25
Andrew Nelson...	1	1	...	...	150	7	...	87.5	87.5	210	210	...	1 25
Bernard Lanning..	1	1	...	...	160	2	...	87.5	87.5	180	180	...	1 25
Mary J. Knox.....	1	1	...	...	60	...	...	...	87.5	80	80	...	1 25
Moody & Bl'nk'n'sp	3	4	...	...	120	...	...	...	87.5	600	600	...	1 50
William Horrocks..	2	2	...	...	180	12	...	87.5	87.5	504	504	...	1 50
William Lopeman..	2	2	...	...	160	11	...	87.5	87.5	500	500	...	1 25
John Kenny.....	1	2	...	...	150	4	...	87.5	87.5	388	388	...	1 25
Smith Bean.....	1	2	...	...	150	8	...	87.5	87.5	380	380	...	1 25
William Bough...	1	1	...	...	160	5	...	87.5	87.5	304	304	...	1 25
Totals	190	229	48	4	.....	72	9	.....	.....	92,144	78,700	13,444	.....
Averages ....	.....	.....	.....	.....	166.3	.....	.....	\$0 89.9	\$0 89.8	.....	.....	.....	\$1 59
								+	+				

* Miners paid gross weight.

† Lump tons.

[illegible][illegible]

McDonough County, 1893—Concluded.

Name of firm, com- pany or person op- erating mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODTCT.													Av. value of lump coal per ton at the mine.
	Miners em- ployed		All other em- ploys.	Boys employed under ground.	Running days in the year.	Kegs of powder used during year.	Casual- ties.		Prices paid per ton for hand mining		Tons of coal mined.			
	Av. during the year.	High'st dur- ing year.					Killed.	Injured.	Sum- mer.	Win- ter.	Total.	Lump coal.	Oth'r grades.	
Quincy C. C. No. 33	72	93	11	7	130	.....	..	..	\$1 12.5	\$1 25	13,572	12,358	1,214	\$1 62
" No. 34	65	81	13	9	250	.....	1	..	1 12.5	1 25	22,063	19,612	2,451	1 62
" No. 35	85	109	16	11	200	.....	..	..	1 12.5	1 25	26,576	22,836	3,740	1 62
" No. 36	73	85	5	..	95	.....	1	..	1 12.5	1 25	15,970	13,673	2,000	1 62
Egerton Coal Co.	30	45	5	..	200	.....	..	..	1 12.5	1 25	12,375	11,250	1,125	1 62
John Myers.....	6	8	..	..	240	.....	..	..	1 12.5	1 25	2,400	2,400	..	1 75
L. H. Ve t.....	4	6	1	..	200	.....	..	..	1 12.5	1 25	1,400	1,400	..	2 00
William Williams..	4	6	1	..	200	.....	..	..	1 25	1 25	1,200	1,200	..	1 75
Louis Atkinson....	3	5	..	..	180	.....	..	..	1 25	1 25	1,000	1,000	..	2 00
Samuel Bright....	2	4	..	..	210	.....	..	..	1 25	1 25	640	640	..	1 75
Lewis Lewis.....	2	4	..	..	200	.....	..	..	1 25	1 25	600	600	..	2 00
Michael Humes....	2	4	..	..	120	.....	..	..	1 25	1 25	400	400	..	1 75
William Robinson..	2	3	1	..	120	.....	..	..	1 25	1 25	330	330	..	2 00
R. R. Gordon.....	2	2	1	..	120	.....	..	..	1 25	1 25	320	320	..	2 00
William Enness....	2	2	1	..	110	.....	..	..	1 25	1 25	300	300	..	2 00
Thomas Cochrane..	2	2	1	..	100	.....	..	..	1 25	1 25	250	250	..	2 00
Michael Whalen....	2	2	..	..	80	.....	..	..	1 25	1 25	200	200	..	2 00
Sam'l Samuelson..	2	2	..	..	90	.....	..	..	1 25	1 25	200	200	..	2 00
Newman Foster....	1	2	..	..	100	.....	..	..	1 25	1 25	200	200	..	2 00
George Carrison...	1	2	..	..	100	.....	..	..	1 25	1 25	200	200	..	2 00
Peter Whalen.....	1	2	1	..	100	.....	..	..	1 25	1 25	200	200	..	2 00
James Heppenstall	1	1	..	..	100	.....	..	..	1 25	1 25	200	200	..	2 00
William Kipling....	2	2	..	..	80	.....	..	..	1 25	1 25	200	200	..	1 75
William Hodgson...	2	2	1	..	80	.....	..	..	1 25	1 25	200	200	..	1 75
William Barber....	1	2	..	..	70	.....	..	..	1 25	1 25	150	150	..	2 00
John Gibson.....	1	2	..	..	60	.....	..	..	1 25	1 25	280	280	..	2 00
McIntyre Bros.....	2	2	..	..	60	.....	..	..	1 25	1 25	260	260	..	2 00
William Baker.....	2	2	..	..	70	.....	..	..	1 25	1 25	260	260	..	2 00
William James....	1	2	..	..	50	.....	..	..	1 25	1 25	260	260	..	2 00
Frank Burdick....	2	2	1	..	50	.....	..	..	1 25	1 25	240	240	..	2 00
Frank Taylor.....	2	3	1	..	70	.....	..	..	1 25	1 25	320	320	..	2 00
Williamerry.....	1	2	..	..	40	.....	..	..	1 25	1 25	80	80	..	1 75
Fergus Whalen....	1	1	..	..	50	.....	..	..	1 25	1 25	80	80	..	1 75
Totals	382	490	60	27	.....	.....	2	.....	.....	.....	102,926	92,096	10,830	.....
Averages .....	.....	.....	.....	.....	119	.....	..	.....	\$1 13.2	\$1 25	.....	.....	.....	\$1 66

Mercer County, 1893—Concluded.

Coal Valley Co....	187	191	222	31	255	5,372	1	4	\$0 60	\$0 60	198,833	146,153	52,680	\$1 50
Charles Peterson..	15	18	14	..	250	468	..	..	* 60	60	21,782	15,361	6,421	1 50
Thomas B. Ellis...	12	22	2	..	225	276	..	..	80	80	6,000	6,000	..	1 62
Empire Coal Co....	2	2	1	..	50	8	..	..	80	80	160	160	..	1 75
Wm. Gardener....	100	125	50	..	300	5,866	..	..	72.5	75	121,291	90,576	30,715	1 15
Frost Bros.....	1	2	..	..	100	..	..	..	75	75	340	340	..	1 25
G.W. Martin.....	2	2	..	..	80	17	..	..	75	75	280	280	..	1 25
G.W. Martin.....	4	6	1	..	210	65	..	..	75	75	2,200	2,200	..	1 25
William Barr.....	3	6	1	..	220	50	..	..	75	75	1,720	1,720	..	1 50
Edward Bowden...	3	6	1	..	230	80	..	..	75	75	1,600	1,600	..	1 50
Docherty & Sons..	4	6	1	..	240	60	..	..	75	75	2,700	2,700	..	1 25
P. C. Peterson....	5	7	1	..	250	112	..	..	1 25	1 25	2,680	2,680	..	1 25
John A. Peterson..	4	7	..	..	160	35	..	1 25	1 25	1 25	960	960	..	1 75
Olof Young.....	3	4	..	..	120	15	..	1 25	1 25	1 25	440	440	..	1 75
Griffin Bros.....	1	2	..	..	80	..	..	1 25	1 25	1 25	100	100	..	1 75
Thomas Bailey....	2	3	1	..	200	18	..	1 25	1 25	1 25	580	580	..	1 75
Henry Fowler....	2	2	..	..	120	22	..	..	75	75	440	440	..	1 25
Parker & Morris...	2	2	..	..	180	..	..	1 00	1 00	1 00	600	600	..	1 50
Totals.....	354	415	295	31	.....	12464	1	4	.....	.....	363,206	273,390	89,816	.....
Averages.....	.....	.....	.....	.....	181.1	.....	.....	.....	\$0 74.2	\$0 80.6	.....	.....	.....	\$1 38

* Miners paid for gross weight.

Rock Island County—Second District—1893.

[illegible]

Schuyler County—Second District—1893.

[illegible]

Rock Island County, 1893—Concluded.

Name of firm, company or person operating mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.												Av. value of lump coal per ton at the mine.
	Miners employed.		All other employees.	Boys employed under 16.	Running days in the year.	Kegs of powder used during year.	Casualties.	Prices paid per ton for hand mining		Tons of coal mined.			
	Av. during the year.	Highst during year.						Summer.	Winter.	Total.	Lump coal.	Oth'r grades.	
Edwin Twomley...	8	14	1	....	250	24	..	\$0 87.5	\$0 87.5	4,832	4,582	250	\$1 50
John Pryce.....	10	14	1	....	220	150	..	75	75	4,288	4,288	....	1 50
Robt. Summerson.	6	11	1	....	230	120	..	75	75	2,824	2,824	....	1 50
Ben. Lewis.....	2	2	..	....	180	7	..	87.5	87.5	670	670	....	1 50
Thomas Lees.....	3	3	..	....	130	....	..	87.5	87.5	540	540	....	1 50
Fred Lindloff.....	1	1	..	....	90	....	..	75	75	140	140	....	1 25
Wm. Sackville.....	1	1	..	....	70	....	..	1 00	1 00	80	80	....	1 75
John Hynd.....	9	13	1	....	220	120	..	87.5	1 00	3,290	3,290	....	1 62
John H. Lotting...	10	13	1	....	230	130	..	1 00	1 00	3,140	3,140	....	1 62
William Allison...	6	9	1	....	200	80	..	87.5	1 00	2,000	2,000	....	1 62
Donald & Jamieson	3	4	1	....	80	20	..	....	1 00	400	400	....	1 50
William Parker...	8	12	1	....	215	80	..	87.5	87.5	2,700	2,700	....	1 50
David Walsh.....	4	6	1	....	160	27	..	87.5	87.5	900	900	....	1 50
Silvis & Silvis.....	10	16	3	....	275	253	..	87.5	1 00	6,184	6,184	....	1 70
George B. Henry..	6	10	1	....	120	....	..	1 00	1 00	1,120	1,120	....	2 00
Porter & Anderson	2	2	..	....	100	12	..	....	1 00	440	440	....	1 75
Groth Bros.....	2	2	..	....	100	10	..	....	1 00	420	420	....	1 75
Patrick Walton....	4	6	1	....	50	12	..	....	1 00	340	340	....	2 00
Totals.....	95	139	14	....	1,045	..	..	....	....	34,308	34,058	250	....
Averages .....	....	....	....	....	162.2	....	..	\$0 86.4	\$0 91.4	....	....	....	\$1 60

Schuyler County, 1893.—Concluded.

John Kerr.....	25	33	6	....	130	400	..	\$0 65	\$0 75	11,121	8,341	2,780	\$1 05
Cummings & Grève	5	9	..	....	185	100	..	75	75	1,774	1,774	....	1 25
Rufus Porter.....	4	6	1	....	270	....	1	*	*	2,160	2,160	....	1 50
Abner Winners....	7	12	1	....	150	....	..	75	75	1,580	1,580	....	1 25
Allen & Nelson....	5	7	1	....	170	60	..	75	75	1,660	1,660	....	1 25
Henry Croxton....	2	3	..	....	100	10	..	....	75	280	280	....	1 25
Walter Croxton....	1	1	..	....	120	6	..	....	75	160	160	....	1 25
Totals.....	49	71	9	....	576	..	1	....	....	18,735	15,955	2,780	....
Averages .....	....	....	....	....	161	....	..	\$0 68.7	\$0 75	....	....	....	\$1 18

* Miners paid by the day.

Stark County—Second District—1893.

[illegible]

Warren County—Second District—1893.

[illegible]

Stark County, 1893.—Concluded.

Name of firm, company or person operating mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.												Av. value of lump coal per ton at the mine.	
	Miners employed.		All other employees.	Boys employed under ground.	Running days in the year.	Kegs of powder used during year.	Casualties.		Prices paid per ton for hand mining.		Tons of coal mined.			
	Ar. during the year.	High't during year.					Killed.	Injured.	Summer.	Winter.	Total.	Lump coal.		Oth'r grades.
George Watson ...	8	12	2	...	250	42	...	\$0 75	\$0 75	3,880	3,880	.....	\$1 50
James Higbie	7	12	1	...	220	80	...	87.5	87.5	3,000	3,000	.....	1 75
Peter Harburger ...	3	4	...	...	140	...	...	75	75	860	860	.....	1 25
Richard Howarth ..	2	4	1	...	230	12	...	87.5	87.5	840	840	.....	1 75
Joseph Swanson ...	4	5	1	...	70	7	...	87.5	87.5	500	500	.....	1 75
Robinson Bros.	5	6	1	...	45	4	...	87.5	87.5	360	360	.....	1 75
Hiram Thurston....	2	3	...	...	100	...	...	75	75	310	310	.....	1 25
John Price ..	2	2	...	...	60	...	...	87.5	87.5	180	180	.....	1 50
Steph's'n & Wats'n	2	2	1	...	35	3	...	87.5	87.5	100	100	.....	1 75
John Scott ..	3	5	1	...	280	5	...	87.5	87.5	1,640	1,640	.....	1 62
Elmer Briggs ..	4	7	1	...	140	...	...	75	75	880	880	.....	1 25
Jesse Savill ..	3	5	1	...	160	...	...	87.5	87.5	806	806	.....	1 62
Thomas Watt ..	2	2	...	...	100	...	...	75	75	320	320	.....	1 25
John Snare ..	2	2	...	...	90	...	...	75	75	280	280	.....	1 25
Aaron Newton ..	2	3	...	...	170	4	...	75	75	660	660	.....	1 25
William Newton ..	2	4	...	...	160	2	...	75	75	500	500	.....	1 25
Henry Newton ..	1	1	...	...	160	...	...	75	75	260	260	.....	1 25
Thos. D. Aitken ..	4	6	1	...	220	100	...	1 00	1 00	1,600	1,600	.....	2 00
Daniel Phenix....	3	5	1	...	200	45	...	1 00	1 00	1,000	1,000	.....	2 00
James Green ..	4	6	1	...	200	...	...	87.5	87.5	1,520	1,520	.....	1 50
John Catton ..	5	6	...	...	200	24	...	75	75	1,150	1,150	.....	1 50
Robert Caney ..	4	6	1	...	180	45	...	1 00	1 00	1,000	1,000	.....	2 00
C. E. Berg ..	2	3	1	...	180	...	...	75	75	750	750	.....	1 50
C. H. Gillette ..	2	3	1	...	200	...	...	75	75	650	650	.....	1 50
Totals	81	114	16	.....	373	...	...	...	...	23,070	23,070	.....	...
Averages .....	...	...	...	.....	158	...	...	\$0 84.6	\$0 83.4	.....	.....	.....	\$1 60

Warren County, 1893—Concluded.

William Cook	3	5	1	...	225	50	...	\$0 87.5	\$0 87.5	1,520	1,520	.....	\$1 75
John Simcock	4	6	1	...	200	70	...	87.5	87.5	1,400	1,400	.....	1 75
John Moulton	4	6	1	...	160	10	...	1 12.5	1 12.5	1,000	1,000	.....	1 75
William Packard ..	2	4	1	...	180	...	...	1 12.5	1 12.5	500	500	.....	1 75
Andrew Walsh	2	2	...	...	140	...	...	1 12.5	1 12.5	440	440	.....	1 75
Andrew Wolfer	2	2	...	...	130	...	...	1 12.5	1 12.5	400	400	.....	1 75
J. V. White ..	3	5	...	...	160	...	...	1 25	1 25	480	480	.....	2 00
John Gordon ..	2	3	...	...	170	...	...	1 25	1 25	420	420	.....	2 00
Daniel Bird	2	2	1	...	160	...	...	1 50	1 50	348	318	.....	2 50
L. Carpenter ..	3	4	...	...	100	...	...	1 25	1 25	320	320	.....	2 00
Thomas Lee, Sr.	1	1	...	...	75	...	...	1 25	1 25	80	80	.....	2 00
Thos. Wearmouth ..	4	5	...	...	200	...	...	1 25	1 25	880	880	.....	2 00
John Van Winkle ..	2	2	...	...	150	...	...	1 25	1 25	288	288	.....	2 00
Thomas Lee, Jr.	2	2	...	...	160	...	...	1 25	1 25	280	280	.....	2 00
J. W. Booten ..	2	2	...	...	140	...	...	1 25	1 25	260	260	.....	2 00
Henry Smith	1	1	...	...	100	...	...	1 25	1 25	112	112	.....	2 00
Joseph Wilson ..	2	2	...	...	120	...	...	1 25	1 25	240	240	.....	2 00
Joseph Simpson ..	1	1	...	...	130	...	...	1 25	1 25	140	140	.....	2 00
Thomas Caldwell ..	10	13	...	...	200	...	...	1 25	1 25	1,844	1,844	.....	1 75
Fred Ninaker ..	3	4	...	...	120	...	...	1 25	1 25	384	384	.....	1 75
Willis Clayton ..	2	2	...	...	120	...	...	1 25	1 25	280	280	.....	1 75
Thomas Delaney ..	2	2	...	...	110	...	...	1 25	1 25	260	260	.....	1 75
Totals	59	76	5	...	130	...	...	...	...	11,876	11,876	.....	...
Averages .....	...	...	...	...	147.3	...	...	\$1 12.3	\$1 14.7	...	...	...	184.6

Recapitulation of Coal Mines by Counties—

COUNTIES.	MINES.						MINERS.								Cas-ualties.			
	Number of mines. Shipping mines. Mines in local trade. New mines..... Abandoned mines. Estimated number of acres worked out during year.						No. of miners and other employes.				Average number of running days.	Number of kegs of powder used.	Killed.	Widows.	Children.	Injured.		
							Average No. of miners.	Highest No. of miners.	No. of other employes.	No. boys un- der ground.								
Bureau.....	18	8	10	2	1	244.5	1,966	2,191	799	32	220	400	3	1	4	50		
Hancock.....	4	1	3	2	4	1.9	22	31	3	...	185	...	...	...	...	...
Henry.....	23	5	23	4	4	50.4	309	467	77	9	208	514	1	...	...	5		
Knox.....	39	...	39	8	11	17.0	156	220	25	2	162.3	121	...	...	...	1		
Marshall.....	12	2	10	2	1	27.8	190	229	48	4	166.3	72	...	...	...	9		
McDonough.....	33	5	28	6	17	37.1	382	490	60	27	119	...	...	...	...	2		
Mercer.....	19	3	16	4	3	64.7	354	415	295	31	181	12,464	1	...	...	4		
Rock Island.....	18	1	17	2	6	10.1	95	139	14	...	162.2	1,045	...	...	...	...
Schuyler.....	7	2	5	3	1	4.0	49	71	9	...	161	576	...	...	...	1		
Stark.....	24	...	24	2	4	6.7	81	114	16	...	158	373	...	...	...	...
Warren.....	22	...	22	6	5	5.9	59	76	5	...	147.3	130	...	...	...	...
Totals.....	224	27	197	41	57	470.1	3,663	4,443	1,351	105	.....	15,698	5	1	4	72		
Averages.....	...	...	...	...	...	.....	.....	.....	.....	.....	171.1	.....	...	...	...	...

Whole number of openings reported in 1892, 240.

Number of new mines or places opened during the year, 41.

Number of mines exhausted or abandoned during the year, 57.

Whole number of openings reported for 1893, 224.

Second Inspection District—1893.

COUNTIES.	PRICES AND PRODUCTS.						Average value of coal per ton at the mine.		Aggregate value of total products.
	Average prices for hand-mining.			Tons of coal mined.			Lump.	Other grades	
	Sum-mer.	Win-ter.	Aver-age for the year.	Total tons.	Tons of lump.	Tons of other grades			
Bureau	\$0 83.37	\$0 89.94	\$0 87.67	1,143,270	976,572	166,698	\$1.422	\$0.244	\$1,429,224
Hancock.....	1 00	1 17.4	1 11.8	5,060	5,060	.....	1.633	.....	8,262
Henry	0 88.5	0 89.81	0 88.6	156,261	148,324	7,937	1.516	0.494	228,706
Knox	0 89.8	0 88	0 88.5	49,808	49,808	.....	1.565	.....	77,941
Marshall.....	0 89.9	0 89.8	0 89.84	92,144	78,700	13,444	1.586	1.307	133,008
McDonough.....	1 13.2	1 25	1 21.22	102,926	92,096	10,830	1.661	0.25	155,703
Mercer.....	0 74.2	0 80.6	0 90.74	363,206	273,390	89,816	1.381	0.335	418,522
Rock Island.....	0 86.4	0 91.4	0 89.8	34,308	34,058	250	1.595	.....	54,408
Schuyler	0 68.7	0 75	0 73	18,735	15,955	2,780	1.18	0.40	19,928
Stark	0 84.6	0 83.4	0 83.7	23,070	23,070	.....	1.60	.....	36,873
Warren.....	1 12.3	1 14.7	1 14	11,876	11,876	.....	1.846	.....	21,919
Totals .....	.....	.....	.....	2,000,664	1,708,909	291,755	.....	.....	\$2,584,494
Averages.....	\$0 87.16	\$0 92.47	\$0 90.74	.....	.....	.....	\$1.455	\$0.335	.....

THIRD INSPECTION DISTRICT---1893.

MR. GEORGE A. SCHILLING,

Secretary of the State Bureau of Labor Statistics, Springfield, Ill.:

SIR:—In conformity with the requirements of section twelve of the mining laws of this State, I herewith submit to you the tenth annual report for the Third Inspection District.

This report mentions briefly the various matters pertaining to coal mining which is of interest to the public in the order herein mentioned; a tabular form showing totals and averages; also a tabular form showing an increase or decrease of output in the different counties; improvements; new openings; change of ownership; labor difficulties; desired legislation; infraction of the mining laws; accidents, etc.

Output of Coal.—The amount of coal business done in the district this year is greater than ever before, the total increase over the preceding year being 136,482 tons. This increase would have been considerably greater if it had not been for the suspension of labor at Danville, Dunfermline and St. David. All counties in this district have an increase in output compared with former years, except Peoria, Menard and McLean.

The following are summaries for the district for the fiscal year 1893:

Total mines in operation.....	236
Total shipping mines.....	84
Total local mines.....	152
New mines.....	6
Mines abandoned.....	26
Average number of miners employed.....	3,764
Highest number employed.....	5,234
Total of others employed.....	1,730
Total number of boys employed.....	286
Total number employed in and around the mines of the district.....	6,964
Total tons of all grades produced.....	3,397,433
Total tons of lump produced.....	2,860,299
Total tons of other grades produced.....	537,134
Aggregate value of total product.....	\$3,260,758
Average value of lump coal per ton.....	\$1.074
Estimated number of acres of coal worked out.....	639.92
Average number of days worked during the year.....	174.4
Total number of kegs of blasting powder used.....	101,828
Number of fatal accidents.....	12
Number of non-fatal accidents.....	51
Number of employes for each fatal accident.....	580
Number of employes for each non-fatal accident.....	137
Number of tons of coal produced to each fatal accident.....	283,119
Number of tons of coal produced to each non-fatal accident.....	66,616

The following table shows the increase or decrease in the output of coal in each county compared with the preceding year:

Counties.	1893.	1892.	Increase.	Decrease.
Vermilion	996,768	972,589	24,179	.....
Fulton	772,497	666,473	106,024	.....
Peoria	620,149	632,939	.....	12,790
Menard	281,635	285,695	.....	4,060
McLean	204,827	222,372	.....	17,545
Logan	189,319	187,356	1,963	.....
Woodford	180,131	158,041	22,090	.....
Tazewell	123,957	120,156	8,801	.....
Cass	23,150	15,330	7,820	.....
Total	3,397,433	3,260,951	170,877	34,395
Net increase .....	.....	.....	136,482	.....

Improvements.—The following mentioned matters are the most important improvements accomplished in the past year for the health and safety of those employed in and around the coal mines:

The Glenburn Coal Co. at Glenburn, has sunk a new air and escape shaft, which is larger in area and is at a safer distance from the hoisting shaft, in case of fire, and is provided with a larger fan for ventilating. When this mine was sunk eight years ago, it was fitted up as a gin-shaft for local trade; the escapement shaft was too small in area and too close to the hoisting shaft, but when the Glenburn Coal Co. took hold of the mine in 1891, making it a shipping mine, thus necessitating the employing of a larger number of men under ground, also the erection of larger buildings above ground. When the attention of the company was called to the dangerous condition of the air-shaft in case of fire, owing to its proximity to the main buildings, it readily consented to at once sink a larger shaft, at a distance in harmony with the present mining law, and one that would secure the safety of those under ground. This company has also been experimenting with an electric mining machine, but after a trial of two or three months it was found to be impracticable to operate it successfully in that coal seam.

The Claire Coal Co., at Middle Grove, has increased the area of its air shaft nearly double, and has erected over it a ventilating fan twelve feet in diameter. This will at least double the capacity of the air-current that existed under the previous condition.

The Maplewood Coal Co., at Farmington, has also increased the area of its air and escape shaft and intend erecting thereon a second ventilating fan. This will be a fan for each side of the mine, giving to each side its own air current and an increase in volume of the circulation of air compared with the former method.

The main trouble in ventilating a mine in this particular section of the district is that the coal seam does not exceed four feet in height. In the hauling-ways a certain amount of the fire-clay underlying the coal seam is lifted to make these ways five and one-half feet in height; this is done to enable the mules to get to the coal faces. However, in air-courses which

generally run parallel with the hauling-way, there is no bottom raised; the bottom of itself will in time, through the action of the atmosphere, have a tendency to heave at least one foot of the original four, in height, thus leaving an air-way which will possibly not exceed twenty feet in area; and, to get a large volume of air through an air-way of this dimension means a larger amount of resistance to the air-current, and the result is but a small quantity of air for the power expended.

The Whitebreast Fuel Co., at Dunfermline, has put in two Murphy fans, six feet in diameter, on the air-shaft sunk at this mine last year. This additional ventilating power will give each side of the shaft separate air currents and a larger volume.

The Consolidated Coal Co., of St. Louis, has erected a fan ten feet in diameter on their coal mine located at Fairmount, which will greatly improve the circulation of air in volume.

James Law, at Cuba, has renewed the cribbing in his hoisting shaft with stronger timbers, which was in an unsafe condition, the timber being too light when put in, some seven years ago. He has also put in a pair of hoisting engines geared 1 to 3. These improvements will greatly add to the safety of the mines and enable him to do a larger business.

New Openings.—The number of new openings in this district this year, compared with former years, is small. The most extensive opening which, at this writing, is prepared for shipping coal, is the Chicago and Kansas City Coal Co., at Petersburg. The shaft is located on the C. & A. R. R., one mile southwest of the town. A favorable seam of coal five and one-half feet in height was struck at a depth of 180 feet. The equipment of the mine, when completed, will rank among the best in the district. A pair of the Litchfield Manufacturing Co.'s engines, 16 by 30 inches, direct acting, have been put in, with an eight-foot drum, and four cylindrical steam boilers. The foundations for the engines, boilers, towers, scales and engine-chutes are substantial and well laid, something that is very often overlooked when companies are erecting extensive equipments. The tower and frame-work is strong and well arranged for the handling of coal in large quantities. The hoisting shaft is properly sunk and of ample area, and the cribbing is strong and in line. The escape and air shaft is also sunk and well fitted up with a ventilating fan.

The Muncie Coal Co., at Muncie, Vermilion county, has sunk a coal shaft on the C. C. C. & St. L. R. R. close to the town. The coal was found at a depth of 200 feet, and is five feet in height. The general equipment and construction of the top part of this mine is light and poorly arranged for business. Up to date the company has failed to have a switch put in; all the coal hoisted in the past year has been hauled in wagons from the mine to the railroad depot and then loaded into cars.

Change of Ownership.—The changes of ownership within the past year have been considerable. The Consolidated Coal Co., of St. Louis, which operates a large number of mines in this State, purchased in December, 1892, the drift mine formerly owned by Millard & Wolschlag, at Peoria. This mine is located three and one-half miles west of Peoria, and is so

located that they can ship via either the Iowa Central or C., B. & Q. R'y. The same company, also, at the same time, bought the coal shaft owned by Pfender Bros. This shaft is seven miles west of Peoria, and is located on the Iowa Central R'y. The same company also purchased the Fairmount mine, in Vermilion county, formerly belonging to A. C. Daniels, who had purchased the mine six months prior to this sale; during this time he was busy remodeling the works and buildings on top, putting in stronger machinery, steam boilers, etc., and also improving the hauling ways underground.

Graham & Murdoch have leased the mine formerly operated by John Emans, at Farmington, Fulton county; this mine is located one and one-half miles west of the town, on the Iowa Central R. R.

Dickason & Frazier, of Danville, have leased and are operating the mines at Grape Creek, formerly owned and operated by the Grape Creek Coal Co.; the company becoming financially embarrassed, necessitated the appointing of a receiver, who leased the coal property to Dickason & Frazier.

The Illinois Coal & Coke Co., at Wolcott, in Peoria county, also became financially embarrassed, and the property being put up at sheriff's sale, was bought by a company doing business under the name of the Peoria Coal & Mining Co., who are at present operating same.

The Sholl Bros., Peoria, have become the operators of the mine formerly operated by their father, Adam Sholl.

Labor Difficulties.—The miners employed by the Whitebreast Fuel Co., which comprise the mines located at Dunfermline, St. David and Bryant, in Fulton county, and in which are employed about 400 men, came out on a strike November 1, 1892, demanding a higher rate than the district rate, which was 55 cents per ton, gross weight; this the company refused; after five weeks of idleness the miners accepted the company's final offer of 75 cents per ton for screened coal in winter, and 67½ cents per ton in summer. The men have also been required to sign a contract with reference to semi-monthly payment of wages, and allowing deductions to be made from pay for orders given, etc., also agreeing to leave the company's houses when quitting its employ.

The miners employed by the Consolidated Coal Co., of St. Louis, at Danville, suspended labor February 26, 1893, until August 1, 1893. The cause of this suspension of labor was that the company paid weekly; on Monday evening of each week payment would be made to company men only, for the week previous; Tuesday evening miners working on check from "1" to "50" were paid, and Wednesday evening the miners from check "51" to "100"; this necessitated about five pay nights every week. The miners made a demand that all men employed be paid at the same time, but the company refused and the miners stopped work until August 1, the final conditions of agreement being semi-monthly pay. Three-fourths of the miners concerned in this strike found employment in other mines around Grape Creek, Westville, Oakwood, etc. Quite a number of other

suspensions of labor have taken place at various points throughout the district lasting from one to six days from such causes as weighing coal, weighmen, dilatoriness in pay days, etc.

Desired Legislation.—There being so many defective points in the mining law of this State, it would be commendable for the legislature at the forthcoming session to appoint a commission composed of the most competent persons interested in mining, and to represent both miners and operators, which shall thoroughly revise the entire law so as to make it effective and easier understood. It would also be commendable that the mine inspection districts be re-districted, so as to form one or more additional inspection districts; the amount of labor in the inspection districts at present is not as uniform as it should be. During the time that has elapsed since the mine inspection service of the State was introduced, ten years ago, considerable changes have taken place which make it necessary for a re-districting of the State so as to bring the work to a point as nearly uniform in each district as possible, and at the same time increase the number of inspection districts.

Infraction of Mining Law.—Operators all over this inspection district, as a rule seem inclined to abide by the law. There may be at times some minor offenses, but when their attention is called to the matter they seem ready and willing to comply with the law. My experience of eight years in the service, is, that most of the operators look to the inspector for counsel and advice on how to proceed under certain difficulties pertaining to coal mining, and seem to have every confidence in his advice as being for the best interest of all concerned.

Accidents.—The number of fatal accidents this year is twelve, being one more than last year. Six were single men and six married, the latter leaving seventeen persons depending on them for their living. Six of these fatal accidents were caused by falling rock; two by falling coal; two by being caught by the hoisting cage; one by coal from a blast, and one from flying debris in a gas explosion. The following is a brief report of the manner in which each person lost his life:

July 13, 1892, John Speed, age 55, single, was fatally injured at Vicary Bros.' mine, located five miles west of Peoria. Deceased had applied a match to a blast and before he had time to retire to a place of safety, the shot went off, injuring him. It is supposed that he cut the fuse too short, which did not allow him time to get to a place of safety.

November 25, 1892, George Cooper, age 39, was injured by a fall of coal in No. 5 mine, operated by Dickason & Frazier, Grape Creek. Cooper was undermining a standing shot when the coal rolled over, fatally injuring him. Deceased leaves a widow and three children.

December 29, 1892, James Wilson, employed as night timberman by the Colfax Coal Co., Colfax. Deceased had given orders to two coal miners who were breaking off a room from the entry, not to work that night as the roof was bad over the entry opposite their room. After they had gone home, Wilson had occasion to take a load of timber into that same entry, and while cleaning away some fallen rock, opposite the room above

mentioned, to get his car past, a large piece of rock fell on him, from the effect of which he died the following evening. Wilson was married but had no family.

January 8, 1893, Julian Kelps, age 45, married, no children, was employed as a miner by the Kellyville Coal Co. No. 2 mine, Westville. Deceased had fired a shot at noon. Being anxious to find what work it had done, he went back immediately after firing. The blast had removed some props and while he was trying to adjust the timbers, a large piece of rock fell, injuring him so that he died nine days afterward.

January 9, 1893, William Reynolds, age 28, single, was employed as a miner in the Vicary Bros. coal mine, near Peoria. Deceased, in company with one of the operators, was clearing away some fallen rock from the face of a room when a piece of rock fell on him, from which injuries he died two hours afterward.

January 18, 1893, Ben Woodruff, age 19, single, was working in company with an older miner in the Kellyville Coal Co.'s No. 1 mine, Westville. Woodruff was in the act of loading the first car in the morning when a large piece of rock rolled off a "slip," fatally injuring him.

February 2, 1893, John Goodman, employed by the Athens Coal Co. as cager, age 19, single. At quitting time on the above date there had been one loaded car too many sent up the shaft and for which there was no place to dump. The engineer was signaled to lower the loaded cage to the bottom again, and having an empty cage coming up the other side, lowered the loaded cage under a head of steam to assist the brake; when the loaded cage was within one foot of the bottom, Goodman pushed and his partner pulled the car off the cage before the engineer had time to throw off the steam; the consequence was the engines reversed and the cage going up caught Goodman at the door-head, injuring him so that he died a few minutes afterward.

April 12, 1893, Marquis Rogers, age 36, single, employed as topman by the Muncie Coal Co., Muncie. He was at the time of the accident hallooing down the shaft to the cager; the engineer had received the signal to hoist, and, not knowing Rogers was at the lower landing, commenced hoisting; the descending cage caught him on the head killing him instantly.

April 14, 1893, Fred Buhl was in the act of firing a blast in the Maplewood Coal Co.'s mine at Farmington; believing his fuse had gone out he concluded to enter the room and relight it, but when directly opposite his room and while still on the entry the shot went off, coal from the blast striking and killing him instantly. He was 35 years of age and single.

May 15, 1893, Michael Gleason, age 40, married, leaves a widow and three children. He was employed as a laborer on the night shift by the Lincoln Coal Co., Lincoln, and, at the time of the accident, was, with others, building up the entrance to an abandoned room that had caved in a few days before. They were instructed to use, and were furnished with safety lamps; when the room was nearly closed off, the fire damp collected in

the abandoned room moving through the small opening that yet remained and ignited from a naked light. The deceased, being the only person directly opposite the room, was instantly killed by the force of the explosion that occurred, it having blown out the wall they were building, the debris of which completely covered Gleason. Upon investigation afterward it was found the safety lamps had not been used that evening.

June 26, 1893, C. Baushka, age 32, married, two children, employed as a miner in the McLean County Coal Co.'s mine, Bloomington. While underground, a large block of coal fell injuring him internally, to which he succumbed a few minutes afterward.

June 28, 1893, Aug. Sharlow, employed as a miner by the Pawnee Coal Co. at Danville. Having fired a shot at quitting time, he went back to his room to see what the blast had done. Observing that a set of timbers had been knocked out he began the resetting of them, when a piece of rock fell, injuring him so that he died July 16, age 48, widower, five children dependent.

In the following tables will be found all the particulars of the fatal and non-fatal casualties:

Fatal Casualties—Third District, 1893.

Date.	Name.	Age.	Occupation.	Residence.	Married.	Widow.	Children.	Single.	Dependents.	Cause of Accident.
1892.										
July 13	John Speed.....	55	Miner.....	Peoria.....	1	1	3	1	4	Falling rock.....
Nov. 25	George Cooper.....	39	Miner.....	Gripe Creek	1	1	3	1	4	Falling coal.....
Dec. 29	James Wilson.....	38	Timberman	Colfax.....	1	1	1	1	1	Falling rock.....
1893.										
Jan. 8	Julian Kelps.....	45	Miner.....	Westville...	1	1	1	1	1	Falling rock.....
" 9	Wm Reynolds.....	28	Miner.....	Peoria.....	1	1	1	1	1	Falling rock.....
" 18	Ben Woodruff.....	19	Miner.....	Westville...	1	1	1	1	1	Falling rock.....
Feb. 2	John Goodman.....	19	Cager.....	Athens.....	1	1	1	1	1	Ascending cage.....
April 12	Marquis Rogers.....	36	Topman.....	Muncie.....	1	1	1	1	1	Descending cage.....
" 14	Fred Buhl.....	35	Miner.....	Farmington	1	1	1	1	1	Blast explosion.....
May 15	Michael Gleason....	40	Laborer....	Lincoln.....	1	1	3	1	4	Gas explosion.....
June 26	C. Baushka.....	32	Miner.....	Bloomington	1	1	2	1	3	Falling coal.....
" 28	Aug. Sharlow.....	48	Miner.....	Danville....	1	1	5	1	5	Falling rock.....
Totals.....					6	5	13	6	18	

RECAPITULATION OF FATAL CASUALTIES.

Residence.	No.	Occupation.	No.	Nature of Casualty.	No.	Colliery.	No.
Athens.....	1	Cager.....	1	Ascending cage..	1	Athens Coal Co....	1
Bloomington..	1	Laborer.....	1	Blast explosion..	1	Colfax Coal Co....	1
Colfax.....	1	Miners.....	8	Descending cage..	1	Dickason & Frazier	1
Danville.....	1	Timberman..	1	Falling coal.....	2	Kelleyville Coal Co	2
Farmington..	1	Topman.....	1	Falling rock.....	6	Lincoln Coal Co...	1
Gripe Creek..	1			Gas explosion...	1	McLean Co. Coal Co	1
Lincoln.....	1					Maplewood Coal Co	1
Muncie.....	1					Muncie Coal Co....	1
Peoria.....	2					Pawnee Coal Co....	1
Westville.....	2					Vicary Bros.....	2
Totals.....	12		12		12		12

Non-Fatal Casualties—Third District—1893.

Date.	Name.	Age.	Residence.	Married.	Children.	Single.	Depend'ts.	Character of Injury and Cause of Accident.	Time lost—days.
1892.									
July 16	Grant Hill.....	25	Glenburn...	1	1	..	2	Shoulders bruised by falling rock	14
Aug. 2	Edward Whitehurst.....	33	Athens.....	1	4	..	5	Leg bruised by pit-car.....	14
" 8	Richard Clark.....	55	Grape Creek.....	1	7	..	8	Back injured by falling rock.....	32
" 12	Lawn Jenkins.....	26	Oakwood.....	1	1	..	2	Foot injured by falling rock.....	70
" 18	George Watkins.....	17	Danville.....	..	1	..	1	Leg broken by falling rock.....	80
" 18	Charles Karts.....	44	Danville.....	1	3	..	4	Collar-bone broken by falling prop.....	30
" 25	James Strobaugh.....	58	Norris.....	1	1	..	2	Leg broken and head cut by falling rock.....	95
" 30	W. Rose.....	38	Danville.....	1	4	..	5	Knee bruised by pit-car.....	14
Sept. 8	John VanHorne.....	17	Danville.....	..	1	..	1	Collar-bone broken by pit-car.....	30
" 15	O. P. Shelby.....	25	Oakwood.....	1	1	..	2	Back injured by falling rock.....	35
Nov. 2	Wm. Cutright.....	23	Athens.....	1	1	..	2	Foot injured by pit-car.....	60
" 5	John Nicholson.....	50	Grape Creek.....	1	5	..	6	Body injured by pit-car.....	60
" 19	Jesse Hiller.....	43	Mid'le Grove.....	..	1	..	1	Leg injured by pit-car.....	55
" 19	Gus Guilbrant.....	26	Canton.....	..	1	..	1	Head cut by falling rock.....	14
" 20	C. Shortall.....	56	Oakwood.....	1	1	..	2	Back and hip bruised by falling rock.....	28
" 29	Dan. Lewis.....	52	Danville.....	..	1	..	1	Arm bruised by falling coal.....	21
Dec. 5	Thomas Longers.....	35	Astoria.....	1	1	..	2	Shoulder injured by falling from scaffold.....	10
" 22	L. H. Strolev.....	63	Canton.....	..	1	..	1	Leg injured by falling rock.....	12
" 25	Joseph Englehardt.....	55	Mt. Pulaski.....	1	3	..	4	Body bruised by flying coal.....	21
" 26	Fred Meyer.....	20	Mt. Pulaski.....	..	1	..	1	Arm and face burned by blast.....	40
" 29	Frank Traner.....	23	Canton.....	..	1	..	1	Ribs broken by falling rock.....	30
" 30	Wm. Davis.....	44	Danville.....	1	3	..	4	Arm broken by falling coal.....	75
1893.									
Jan. 13	Thos. Flemming.....	20	D'nfermline.....	..	1	..	1	Finger cut off by pit-car.....	30
" 16	Samuel Smoot.....	30	Oakwood.....	1	2	..	3	Ankle bruised by pit-car.....	14
" 16	William Hafford.....	27	D'nfermline.....	1	1	..	2	Body injured coupling R. R. cars.....	7
" 19	C. Garrey.....	59	Danville.....	1	2	..	3	Eye injured by a blast.....	21
" 23	Thos. Donaldson.....	18	D'nfermline.....	..	1	..	1	Leg broken by pit-car.....	80
Feb. 2	Edward Ray.....	24	D'nfermline.....	1	2	..	3	Leg injured by pit-car.....	21
" 10	Aug. Henke.....	51	Lincoln.....	1	3	..	4	Body bruised, injured internally, by fall ng rock.....	180
" 20	Aug. Seidelman.....	46	Danville.....	1	3	..	4	Leg broken by falling rock.....	90
Mar. 1	Martin Coleman.....	50	Tallula.....	1	1	..	2	Jaw-bone broken by coal from blast.....	90
" 8	Mat. Wochna.....	32	Minonk.....	1	3	..	4	Leg broken by falling rock.....	144
" 27	L. Cunningham.....	30	Westville.....	1	2	..	3	Leg broken by falling coal.....	75
" 27	Thos. Chockley.....	32	Astoria.....	1	3	..	4	Foot injured by falling rock.....	12
" 30	Daniel Kennedy.....	19	Lincoln.....	..	1	..	1	Finger cut off coupling pit-cars.....	90
April 3	Charles Calahan.....	27	Fairmount.....	1	1	..	2	Foot hurt by railroad car.....	14
" 14	J. R. Sprinkle.....	55	Farmington.....	1	1	..	2	Shoulders bruised by coal from blast.....	21
" 15	Isaac Simmons.....	40	Lincoln.....	1	1	..	2	Fingers injured coupling pit-cars.....	21
" 24	William Dixon.....	25	Norris.....	..	1	..	1	Head injured by pit-car.....	45
" 25	John Christianson.....	21	Fairmount.....	..	1	..	1	Face and neck burned by blast.....	50
" 25	Jacob Covert.....	25	Fairmount.....	..	1	..	1	Face and neck bruised by blast.....	14
" 25	Peter Covert.....	23	Fairmount.....	..	1	..	1	Face and arms bruised by blast.....	20
May 15	Joseph Page.....	45	Lincoln.....	1	7	..	8	Head and body injured by gas explosion.....	75
" 15	Geo. Herberger.....	37	Lincoln.....	1	1	..	2	Body injured by falling rock.....	10
" 15	Henry Wilmot.....	40	Lincoln.....	1	1	..	2	Body bruised by rock from explosion.....	50
" 19	Chris. Strimmeyer.....	50	Lincoln.....	..	1	..	1	Body injured by cage.....	30
June 3	Frank Ford.....	18	Bryant.....	..	1	..	1	Back hurt by falling rock.....	25
" 7	Robert Morton.....	28	Virginia.....	1	..	..	1	Back injured by falling rock.....	21
" 7	John Erickson.....	33	Bloomington.....	1	2	..	3	Leg broken, small bone, by falling coal.....	30
" 16	Edward Gish.....	23	Roanoke.....	1	2	..	3	Ankle broken by falling from upper landing.....	45
" 19	Paul Reviere.....	40	Roanoke.....	1	6	..	7	Knee sprained by falling coal.....	15
	Total—51.	..	.....	34	80	17	115	.....	*...

* An average of 43 days for each man.

RECAPITULATION NON-FATAL CASUALTIES THIRD DISTRICT, 1893.

Residence.	No.	Occupation.	No.	Cause of accident.	No.	Colliery.	No.
Astoria	2	Blacksmith ..	1	Blast explosion..	7	Astoria Coal Co...	2
Athens	2	Drivers	10	Cages	1	Athens Coal Co. ..	1
Bloomington..	1	Laborers	3	Falling coal	5	Chic. & Min. C. Co.	1
Bryant.....	1	Miners	32	Falling fr'm sc'fld	1	Citizens' Coal Co..	3
Canton	3	Pit-boss	2	Falling fr'm l'nd'g	1	Claire Coal Co.	1
Danville	9	Topman	2	Fa ling rock.....	16	Consolidat'd C. Co.	12
Dunfermline ..	3	Trackman	1	Falling timber ...	1	Dickason & Fraz'r	2
Fairmount	4			Flying coal.....	4	Glenburn Coal Co.	1
Farmington ...	1			Pit-cars.....	13	Heald, A. W.....	1
Glenburn	1			Railroad cars	2	Kell'yville Coal Co.	2
Grape Creek...	2					Lincoln Coal Co....	4
Lincoln	7					McLean Coal Co. ...	1
Middle Grove..	1					Maplew'd Coal Co.	1
Minonk.....	1					Middle Fork C. Co.	4
Mt. Pulaski....	2					Roanoke Coal Co....	2
Norris	2					Tallula Coal Co....	1
Oakwood	4					Union Coal Co.....	2
Roanoke	2					Virginia Coal Co. ..	1
Tallula.....	1					Wabash Coal Co. ...	1
Virginia	1					W. Canton C'al Co.	2
Westville.....	1					Whitebreast C. Co.	4
						Williams, D. H....	2
Totals.....	51		51		51		51

Table showing the number of persons injured, nature of injuries, time lost, with averages and percentages, Third District, 1893.

Nature of Accident.	No.	Married.	Single.	Dependents.	TIME LOST.		Per cent- age of injuries.
					Total days.	Average days.	
Ankle broken	1	1	.....	3	45	45	2.
Ankle injured	1	1	.....	3	14	14	2.
Arm broken	1	1	.....	4	75	75	2.
Arms injured	2	.....	2	.....	61	31	3.9
Backs injured	5	4	1	13	141	28	9.8
Bodies injured	7	6	1	20	358	51	13.7
Collar-bones broken	2	1	1	4	60	30	3.9
Eye put out	1	1	.....	3	21	21	2.
Faces injured	3	.....	3	.....	84	28	5.9
Fee injured.....	4	4	.....	10	156	39	7.8
Fingers cut off	2	.....	2	.....	120	60	3.9
Fingers injured	1	1	.....	2	21	21	2.
Heads injured	3	1	2	8	144	48	5.9
Jawbone broken.....	1	1	.....	2	90	90	2.
Knees injured	2	2	.....	12	29	14	3.9
Legs broken	7	5	2	16	594	35	13.7
Legs injured	4	2	2	9	102	26	7.8
Ribs broken	1	.....	1	.....	30	30	2.
Shoulders injured	3	3	.....	6	45	15	5.8
Totals	51	34	17	115	2,190	43	100.00

The statistical tables following give information of each mine in the district, with a recapitulation by counties.

Respectfully submitted,

JAMES FREER,
State Mine Inspector, Third District, Peoria.

Cass County—Third District—1893.

Name of firm, company or person operating mine.	Town or postoffice nearest the mine.	CHARACTER OF PLANT.										Estimated number of acres worked out during the year.
		Drift, Slope, Shaft.	Power, — Steam, Horse or Hand.	Shipping or Local mine.	Hand or Machine mine.	Long-wall or Pillar-and-room.	Old, New or Abandoned mine.	Paid weekly, semi-monthly or in thly.	Depth below the surface,—feet.	Thickness of seam, feet and inches.	Geological number of seam.	
Virginia Coal Co.....	Virginia.....	Sh.	St.	Sh.	H.	P. R.	O.	W'y	214	3.6	5	4.4
Ashland Coal Co.....	Ashland.....	"	"	Lo.	"	L. W.	"	"	265	2.6	5	.75
Julius Darland.....	Chandlerville	"	Hr.	"	"	P. R.	"	"	20	2.9	5	.43
Totals (3 mines).....												5.58
Averages.....												

Fulton County—Third District—1893.

Astoria Coal Mining Co..	Astoria.....	Sh.	St.	Sh.	H.	P. R.	O.	W'y	72	5.9	5	7.7
A. J. Miller.....	".....	Hr.	Lo.	"	"	"	"	"	40	6	5	.1
James Diamond & Sons..	".....	Dr.	"	"	"	"	"	"	50	6	5	.06
Jack Davis.....	Vermont.....	"	Hd.	"	"	"	"	"	60	3	1	.15
C. & R. Roddis.....	Ipava.....	"	"	"	"	"	"	"	25	5.6	5	.25
Whitebreast Fuel Co. "C"	Dunfmline.....	Sh.	St.	Sh.	"	"	"	S.M.	90	4.8	"	23.8
" " "D"	St. David.....	"	"	"	"	"	"	"	90	4.8	"	10.8
" " "E"	".....	"	"	"	"	"	"	"	62	4.8	"	7.5
" " "F"	Bryant.....	"	"	"	"	"	"	"	55	4.8	"	6
James Patterson.....	St. David.....	Dr.	Hr.	Lo.	"	"	"	W'y	20	4.6	"	.14
Carbon Coal Co.....	".....	Sh.	St.	Sh.	"	"	N.	S.M.	56	4.10	"	2.2
William Christian.....	".....	Dr.	Hd.	Lo.	"	"	O.	W'y	50	4.8	"	.06
Isaac Bath.....	Lewistown..	Sl.	Hr.	"	"	"	"	"	30	2.6	1	.17
Henry Florin.....	".....	"	"	"	"	"	"	"	45	2.6	1	.1
A. W. Heald & Son.....	Canton.....	Sh.	St.	Sh.	"	"	"	"	70	4.8	"	10.6
West Canton Coal Co.....	".....	"	"	"	"	"	"	"	80	4.8	"	2.2
Canton Coal Co.....	".....	"	"	Lo.	"	"	"	"	87	4.6	"	1.4
J. W. Grover & Son.....	".....	"	"	"	"	"	"	"	71	4.6	"	.75
Frank Aylward.....	".....	"	Hr.	"	"	"	"	"	60	4.4	6	.5
Thomas Davis.....	".....	"	"	"	"	"	N.	"	25	4.8	"	.06
William Whitham.....	".....	Sl.	Hd.	"	"	"	O.	"	60	4.8	"	.37
Charles Minnett.....	".....	"	Hr.	"	"	"	"	"	50	4.8	5	.3
Hall & Russell.....	".....	Dr.	Hd.	"	"	"	"	"	48	4.6	"	.1
John Bennett.....	".....	Sl.	Hr.	"	"	"	"	"	50	4.4	6	.09
Charles Laville.....	".....	Dr.	"	"	"	"	"	"	25	4.2	6	.07
D. H. Williams.....	Norris.....	Sh.	St.	Sh.	"	"	"	S.M.	112	4.6	"	11.5
Charles Drawyer.....	".....	Dr.	Hd.	Lo.	"	"	"	W'y	60	4	6	.08
Elisha Webster.....	Farmington	"	"	"	"	"	"	"	40	4	6	.05
William Raffle.....	".....	Sh.	Hr.	"	"	"	"	"	30	4	6	.17
Maplewood Coal Min. Co.	".....	"	St.	Sh.	"	"	"	S.M.	105	4.2	"	15.9
Claire Coal Co.....	".....	"	"	"	"	"	"	"	185	4.2	"	16.5
Graham & Murdock.....	".....	"	"	"	"	"	"	"	45	4	5	.2
Claire Coal Co.....	Middle Grov'	"	"	"	"	"	"	"	72	3.10	"	13
James D. Kerr.....	".....	"	"	Lo.	"	"	"	"	65	3.8	"	.1
Edward Morton.....	".....	Dr.	Hd.	"	"	"	"	W'y	25	4	6	.03
M. Zimmerman.....	".....	"	"	"	"	"	"	"	30	4	6	.02
Philip Fulmer.....	".....	"	"	"	"	"	"	"	25	4	6	.1
Eagle Coal Co.....	Fairview..	"	"	Sh.	"	"	"	"	60	4.6	6	.8
R. E. Gould.....	".....	"	"	Lo.	"	"	"	"	55	4.6	6	.8
John Aberdusky.....	".....	"	"	"	"	"	"	"	50	4.4	6	.06
William Brown.....	".....	"	"	"	"	"	"	"	30	4.4	6	.03
L. W. Davis.....	".....	"	"	"	"	"	"	"	30	4.4	6	.04
Jefferson Stout.....	".....	"	"	"	"	"	"	"	40	4.4	6	.07
William Rutherford & Co	Cuba.....	Sh.	St.	Sh.	"	"	"	S.M.	47	4.8	"	6.8
James M. Laws.....	".....	"	"	"	"	"	"	"	80	4.8	"	.4
Eagle Coal Co. No. 1.....	".....	Dr.	Hr.	"	"	"	"	"	40	4.8	"	.9
No. 2.....	".....	"	"	"	"	"	"	"	30	4.8	"	.4
William Nicholson & Son	".....	"	"	"	"	"	"	"	40	4.8	"	1.1
William Johnson.....	".....	"	Hd.	Lo.	"	"	"	W'y	50	4.4	"	.04
Peter Bull.....	".....	"	"	"	"	"	"	"	30	4.4	"	.06

Cass County, 1893—Concluded.

Name of firm, company or person operating mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.													Av. value of lump coal per ton at the mine.
	Miners employed.		All other employees.	Boys employed under ground.	Running days in the year.	K e g s of powder used during year.	Casualties.		Prices paid per ton for hand mining		Tons of coal mined.			
	Av. during the year.	Highest during year.					Killed.	Injured.	Summer.	Winter.	Total.	Lump coal.	Oth'r grades.	
Virginia Coal Co ..	14	23	7	1	290	420	..	1	\$0 65	\$0 75	18,180	16,400	1,780	\$1 25
Ashland Coal Co ..	7	12	5	1	240	..	..	..	75	87.5	3,870	3,870	.....	1 50
Julius Darland	4	6	3	1	200	500	..	..	1 00	1 00	1,100	1,600	.....	1 50
Totals.....	25	41	15	3	...	920	..	1	.....	.....	23,150	21,370	1,780	.....
Averages ....	.....	.....	.....	.....	240	.....	..	..	\$0 68.5	\$0 78.5	.....	.....	.....	\$1 31

Fulton County, 1893—Continued.

Astoria Coal M. Co.	40	50	18	4	310	1,131	2	2	\$0 65	\$0 70	43,604	35,916	7,688	\$1 30
A. J. Miller.....	3	6	2	1	220	28	...	...	65	70	840	840	...	1 25
J. Diamond & Son.	2	6	1	...	200	12	...	...	65	65	450	450	...	1 25
Jack Davis.....	3	2	...	...	175	5	...	...	1 00	1 00	320	320	...	1 50
C. & R. Roddis ..	3	7	1	...	240	65	...	...	75	75	1,500	1,500	...	1 25
Whitebread F'l Co	126	140	58	10	171	4,30	3	3	67.5	75	126,991	95,515	31,476	1 05
"	52	66	25	8	211	1,757	...	...	67.5	75	54,269	42,832	11,437	1 05
"	38	47	18	2	198	1,309	...	...	67.5	75	37,123	29,384	7,739	1 05
"	38	47	16	3	171	826	1	1	67.5	75	28,911	21,584	7,327	1 12
James Patterson ..	2	2	...	...	180	25	...	...	67.5	75	680	680	...	1 00
Carbon Coal Co ..	35	56	15	2	97	490	...	...	67.5	75	13,263	10,275	2,988	1 10
William Christian.	1	2	...	...	90	8	...	...	67.5	75	340	340	...	1 00
Isaac Bath	2	3	1	...	160	...	...	...	1 00	1 00	540	540	...	1 50
Henry Florin	2	2	...	...	120	...	...	...	1 00	1 00	345	345	...	1 50
A. W. Heald & Son.	47	65	13	2	246	1,836	1	1	*50	*55	*56,840	39,799	17,041	1 10
West Canton C.Co.	12	20	14	3	180	426	2	2	*50	*55	*9,460	8,260	1,200	1 10
Canton Coal Co....	15	23	5	1	245	320	...	...	75	75	7,447	7,447	...	1 25
J. W. Grover & Son	4	6	5	2	240	140	...	...	75	75	3,400	3,400	...	1 25
Frank Aylward....	4	8	2	1	200	...	...	...	*50	*55	*2,580	2,580	...	1 00
Thomas Davis.....	2	2	1	...	90	15	...	...	*50	*55	*310	310	...	1 00
William Whitham..	3	4	1	...	200	50	...	...	67.5	75	1,928	1,928	...	1 00
Charles Minnett...	2	3	2	1	195	76	...	...	67.5	75	1,520	1,520	...	1 00
Hall & Russell....	2	2	...	...	90	25	...	...	67.5	75	510	510	...	1 00
John Bennett.....	2	2	1	...	100	...	...	...	67.5	75	480	480	...	1 00
Charles Laville...	2	2	...	...	90	...	...	...	67.5	75	354	354	...	1 00
D. H. Williams....	50	65	30	3	240	1,936	2	2	72.5	80	51,247	39,897	11,350	1 10
Charles Drawyer..	2	2	...	...	100	5	...	...	72.5	80	450	450	...	1 00
Elisha Webster....	2	2	...	...	90	...	...	...	72.5	80	340	340	...	1 00
William Raffle....	3	5	1	...	130	...	...	...	72.5	80	760	760	...	1 25
Maplewood C.M.Co	65	85	18	3	245	2,100	1	1	*50	*55	*66,498	49,615	16,883	1 05
Claire Coal C.....	63	80	20	2	244	2,219	...	...	*50	*55	*66,597	52,133	14,464	1 05
Graham & Murd'k.	8	14	5	2	196	320	...	...	*50	*55	*9,400	8,400	1,000	1 00
Claire Coal Co....	63	73	23	3	188	1,760	1	1	*50	*55	*52,810	41,520	11,290	1 05
James D. Kerr....	2	2	1	...	60	12	...	...	*50	*55	*360	360	...	1 00
Edw'rd Morton....	1	1	...	...	60	...	...	...	75	75	140	140	...	1 00
M. Zimmerman...	1	1	...	...	50	...	...	...	75	75	100	100	...	1 00
Philip Fulmer....	2	2	...	...	90	...	...	...	75	75	420	420	...	1 00
Eagle Coal Co....	4	8	4	2	180	120	...	...	*50	*55	*4,700	4,000	700	1 10
R. E. Gould.....	4	4	1	...	180	...	...	...	75	75	1,210	1,240	...	1 12
John Abdusky....	2	2	...	...	100	...	...	...	75	75	320	320	...	1 00
William Brown....	1	2	...	...	60	...	...	...	75	75	180	180	...	1 00
L. W. Davis.....	1	2	...	...	90	...	...	...	75	75	250	250	...	1 00
Jefferson Stout...	2	2	...	...	100	...	...	...	75	75	380	380	...	1 00
W. Rutherford Co.	45	68	18	2	200	1,200	...	...	*50	*55	*37,700	30,000	7,700	1 10
James M. Laws....	35	52	14	2	210	520	...	...	*50	*55	*21,890	17,890	4,000	1 00
Eagle Coal Co....	4	6	1	...	230	130	...	...	*50	*55	*5,820	4,820	1,000	1 10
"	38	54	9	3	210	522	...	...	*50	*55	*22,400	17,140	5,260	1 10
Nicholson & Son...	5	8	3	1	240	220	...	...	*50	*55	*6,820	6,110	710	1 10
Wm. Johnson.....	2	2	...	...	60	10	...	...	75	75	280	280	...	1 00
Peter Bull.....	2	2	...	...	80	13	...	...	75	75	310	310	...	1 00

Fulton County, 1893—Concluded.

Name of firm, company or person operating the mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.													Av. value of lump coal per ton at the mine.
	Miners employed.		All other employees.	Boys employed under ground.	Running days in the year.	Kegs of powder used during year.	Casualties.		Prices paid per ton for hand mining.		Tons of coal mined.			
	Av. during the year.	Highst during year.					Killed.	Injured.	Summer.	Winter.	Total.	Lump coal.	Oth'r grades.	
J. R. Greene	6	12	6	2	195	200	..	..	\$0 67.5	\$0 75	6,140	5,720	420	\$1 10
John Williams	2	2	..	..	140	..	..	..	..	75	420	420	..	1 00
Theo. Pumyea	2	2	..	..	160	6	..	..	..	75	180	180	..	1 00
A. J. Lane	2	3	..	..	180	..	..	..	..	1 00	480	480	..	1 50
Wilson Varner	2	3	..	..	180	..	..	..	..	1 00	580	580	..	1 50
Charles Howard	2	3	..	..	200	..	..	..	..	1 00	420	420	..	1 50
John Anderson	2	3	..	..	190	..	..	..	..	1 00	370	370	..	1 50
Mark Whitehead	2	3	5	1	200	..	..	..	..	1 00	840	840	..	1 50
Robert Orr	2	4	1	..	180	..	..	..	..	1 00	640	640	..	1 50
Pat Meehan	25	37	8	3	240	430	..	..	67.5	75	12,700	12,700	..	1 05
James Nicholson	2	2	..	..	100	20	..	..	..	75	460	460	..	1 00
Robert Williamson	1	2	..	..	90	12	..	..	..	75	330	330	..	1 00
Thos. Romaine	1	2	..	..	100	10	..	..	..	75	345	345	..	1 00
A. Williams	1	1	..	..	120	8	..	..	..	75	300	300	..	1 00
John W. Lamb	1	2	..	..	110	12	..	..	..	75	310	310	..	1 00
John McArthur	1	1	..	..	100	10	..	..	..	75	280	280	..	1 00
John Winchell	2	3	..	..	120	20	..	..	..	1 00	410	410	..	1 50
William Crouse	2	2	..	..	100	8	..	..	..	1 00	240	240	..	1 50
Solomon Shaffer	2	2	..	..	120	15	..	..	..	75	460	460	..	1 50
J. D. Bankert	1	1	..	..	60	6	..	..	..	75	130	130	..	1 25
C. J. Pickering	2	3	..	..	130	25	..	..	..	1 00	625	625	..	1 25
P. O. Keller	2	2	..	..	100	12	..	..	..	1 00	390	390	..	1 25
Totals	915	1,214	363	63	..	24,819	1	13	..	..	772,497	610,854	161,643	..
Averages .....	..	..	..	..	156	..	..	..	\$ 68.2	\$ 75.7	..	..	..	\$1 09

* Miners paid for gross weight, summer, \$0.50; winter, \$0.55.

† For lump tons.

Logan County, 1893—Concluded.

Lincoln Coal Co....	70	85	45	5	285	3,380	1	4	\$0 51	\$0 51	93,199	78,199	15,000	\$1 05
Citizens' Coal Co....	67	80	37	5	270	2,800	3	3	51	51	74,620	65,000	9,620	1 00
Union Coal Co.....	25	38	13	3	218	990	..	2	51	51	21,500	14,500	7,000	1 00
Totals	162	203	95	13	..	7,170	1	9	..	..	189,319	157,699	31,620	..
Averages .....	..	..	..	..	257.7	..	..	..	\$0 51	\$0 51	..	..	..	\$1.02

McLean County, 1893—Concluded.

McLean Co. C. Co.	200	280	60	8	280	100	1	1	\$ *	\$ *	154,627	116,627	38,000	\$1 25
Colfax Coal Min.Co	40	45	18	4	245	1,240	1	..	†45	†45	38,400	27,600	10,800	1 00
Davis Coal Co	15	25	8	2	260	240	..	..	†75	†80	11,800	8,800	3,000	1 25
Totals	255	350	86	14	..	1,580	2	1	..	..	204,827	153,027	51,800	..
Averages .....	..	..	..	..	262	..	..	..	..	..	..	..	..	\$1 20

* Upper vein \$0.50. Lower vein \$0.60.

† Miners paid for gross weight.

Menard County--Third District--1893.

Name of firm, company or person operating mine.	Town or postoffice nearest the mine.	CHARACTER OF PLANT.										Estimated number of acres worked out during the year.
		Drift, Slope, Shaft.	Power, — Steam, Horse or Hand.	Shipping or Local mine.	Hand or Machine mine.	Long-wall or Pillar-and-Room.	Old, New or Abandoned mine.	Paid weekly, semi-monthly or monthly.	Depth below the surface,—feet.	Thickness of seam, feet and inches.	Geological number of seam.	
Athens Mining Co.....	Athens.....	Sh.	St.	Sh.	Bt.	P. R.	O.	W'y	220	6	5	14.2
Wabash Coal Co.....		Sh.	St.	Sh.	H.			S.M.	187	6	5	14.3
Tallula Coal Co.....	Tallula.....	"	"	"	"	"	"	"	180	5	5	6.8
Menard Coal Co.....	Greenview.	"	"	"	"	"	"	"	104	5.10	5	4.5
J. & P. Gaffigan.....	Petersburg.	"	"	"	"	"	"	"	99	5.6	5	2.6
J. A. Brahm.....	"	"	"	"	"	"	"	W'y	70	5.6	5	3.2
Levi Hohimer.....	"	"	Hr.	L.	"	"	"	"	75	5.6	5	.7
William Parkin.....	Sweetwater	"	"	"	"	"	"	"	170	5.4	5	.5
Dant & Owens.....	Tice.....	"	"	"	"	"	"	"	100	5.6	5	.07
Totals (9 mines).....												46.87
Averages.....												

Peoria County--Third District--1893.

Newsam Bros.....	Kingst'n Ms.	D.	St.	Sh.	H.	P. R.	O.	S-M	90	4.8	5	10.5
Jefford Bros.....		"	Hr.	"	"	"	"	"	100	4.8	5	.9
F. Fahnestock.....		"	"	Lo.	"	"	"	"	60	4.8	5	.1
Peoria Coal & Mining Co.	Wolcott.....	Sl.	St.	Sh.	"	"	"	"	80	4.6	5	9.4
William Foley.....	Mapleton...	"	"	"	"	"	"	"	90	4.8	5	3.2
L. Potter & Co.....		"	"	"	"	"	"	"	50	4.4	5	2.8
Frank Lowery.....	Orchard Ms.	"	"	"	"	"	"	"	90	4.6	5	2
German Coal Co.....		"	"	"	"	"	"	"	120	4.6	5	4.2
James Reagan.....	"	D.	Hr.	Lo.	"	"	"	W'y	50	4.6	5	.1
David B. Roberts.....	"	"	"	"	"	"	"	"	65	4.6	5	.05
Frank Newsam.....	"	"	H.	"	"	"	"	"	70	4.6	5	.1
Matt Nesselhouse.....	"	"	"	"	"	"	"	"	80	4.6	5	.12
Georg McCulloch.....	"	"	"	"	"	"	"	"	40	4.6	5	.06
Walter Treasure.....	Bartonville.	Sl.	Hr.	"	"	"	"	"	110	4.6	5	.9
Lot Hurst.....	"	"	"	"	"	"	"	"	90	4.6	5	.17
George Keller.....	"	Sh.	"	"	"	"	"	"	65	4.6	5	.8
Wolland Bros.....	"	Sl.	"	"	"	"	"	"	180	4.6	5	1.8
Collier's Co-Op. Coal Co.	"	"	"	"	"	"	"	"	180	4.6	5	6.2
Sholl Bros., No. 1.....	Peoria.....	"	St.	Sh.	"	"	"	S-M	120	4.4	5	6.8
Sholl Bros., No. 2.....	"	Sh.	"	"	"	"	"	"	20	4.6	5	9.2
Con. C. Co. of St. L., No. 1	"	"	"	"	"	"	"	"	175	4.4	5	3.4
Con. C. Co. of St. L., No. 2	"	D.	"	"	"	"	"	"	90	4.6	5	4.9
Peter Grant & Son.....	"	Sh.	"	"	"	"	"	"	140	4.4	5	5.4
Royster Bros.....	"	"	"	"	"	"	"	"	48	4.4	5	5.2
William Grant.....	"	Sl.	"	"	"	"	"	"	100	4.4	5	1.5
Vicary Bros.....	"	"	"	"	"	"	"	"	80	4.2	5	2.7
John Glenn.....	"	D.	H.	Lo.	"	"	"	W'y	90	4.4	5	1.4
Frank P. Schmidt & Son.	"	"	"	"	"	"	"	"	80	4.4	5	1.9
John Allen.....	"	"	"	"	"	"	"	"	90	4.4	5	.1
Mrs. K. Mohn.....	"	Sh.	Hr.	"	"	"	"	"	31	4.4	5	.27
E. Brost.....	"	D.	St.	"	"	"	"	"	186	4.4	5	.8
Oliver Brost.....	"	Sl.	"	"	"	"	"	"	186	4.4	5	.7
Peter Kramp.....	"	D.	Hr.	"	"	"	"	"	80	4.2	5	.8
Frank Rewart.....	"	Sl.	St.	"	"	"	"	"	120	4.2	5	.7
Richard Cody.....	"	Sh.	Hr.	"	"	"	"	"	25	4.2	5	1.6
John Toma.....	"	"	"	"	"	"	"	"	70	4.2	5	.13
Dan. Driscoll.....	"	D.	Hd	"	"	"	"	"	100	4	5	.3
Keefe, Masterson & Co..	"	"	"	"	"	"	"	"	100	4	5	.4
J. Birdose & Son.....	"	"	"	"	"	"	"	"	100	4	5	.3

Menard County, 1893—Concluded.

Name of firm, com- pany or person op- erating mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.													Av. value of lump coal per ton at the mine.		
	Miners em- ployed.		All other em- ploys.	Boys employed under ground.	Running days in the year.	Kegs of powder used during year.	Casual- ties.		Prices paid per ton for hand mining		Tons of coal mined.					
	Av. during the year.	High's dur- ing year.					Killed.	Injured.	Sum- mer.	Win- ter.	Total.	Lump coal.	Oth'r gra des.			
Athens Mining Co.	25	35	90	3	228	1,940	1	1	%	+	\$	+	†83,154	72,144	11,010	\$1 00
Wabash Coal Co...	80	115	20	2	186	2,416	1	1	%	40	\$	45	†88,315	67,936	20,379	90
Tallula Coal Co....	35	55	21	1	266	1,800	1	1	50	56	37,920	30,584	7,336	96	96	
Menard Coal Co....	45	70	21	3	170	908	1	1	40	45	†34,640	28,640	6,000	1 00	1 00	
J. & P. Gaffigan....	20	32	13	3	215	620	1	1	50	56	15,600	12,460	3,140	1 00	1 00	
J. A. Bralun.....	18	38	10	1	201	640	1	1	50	56	15,136	11,662	3,474	1 20	1 20	
Levi Hohimer.....	4	8	2	1	210	152	1	1	62½	62½	3,580	3,580	.....	1 25	1 25
William Parkin....	4	6	3	1	220	90	1	1	62½	62½	2,900	2,900	.....	1 50	1 50
Dant & Owens.....	2	2	1	1	100	12	1	1	62½	62½	390	390	.....	1 25	1 25
Totals	233	361	181	16	8,578	1	3	281,635	230,296	51,339
Averages	200	\$0.49	\$0.56.7	\$0 98

† Coal mined both by hand and machine.

* Miners paid for gross weight.

† For lump coal.

Peoria County, 1893—Continued.

Newsam Bros.....	50	87	20	2	195	2,643	1	1	\$ 50	\$ 55	\$59,874	47,768	12,106	\$1 10
Jefford Bros.....	8	16	7	2	180	210	1	1	\$50	\$55	\$4,900	4,900	.....	1 00
F. Fahnestock.....	2	2	1	1	100	28	1	1	\$50	\$55	\$530	530	.....	1 00
Peoria C. & M. Co.	65	95	17	2	170	1,702	1	1	\$50	\$55	\$42,966	36,155	6,811	1 10
William Foley.....	16	25	10	2	190	680	1	1	\$50	\$55	\$14,380	12,000	2,380	1 00
L. Potter & Co.....	14	20	10	2	209	560	1	1	\$50	\$55	\$12,860	10,000	2,860	1 00
Frank Lowery.....	15	25	6	1	229	420	1	1	\$50	\$55	\$7,917	7,122	795	1 05
German Coal Co.....	30	35	12	2	231	793	1	1	\$50	\$55	\$19,025	15,199	3,826	1 26
James Reagan.....	2	2	1	1	90	20	1	1	.....	75	450	450	.....	1 00
David B. Roberts.....	1	2	1	1	60	8	1	1	.....	75	240	240	.....	1 00
Frank Newsam.....	2	3	1	1	80	21	1	1	.....	75	510	510	.....	1 00
Matt Nesse house.....	2	3	1	1	100	20	1	1	.....	75	580	580	.....	1 00
George McCulloch.....	1	2	1	1	80	10	1	1	.....	75	260	260	.....	1 00
Walter Treasure.....	4	8	2	1	230	210	1	1	75	75	4,200	4,200	.....	1 12
Lot Hurst.....	2	4	1	1	140	32	1	1	75	75	780	780	.....	1 12
George Keller.....	4	8	2	1	280	190	1	1	75	75	3,480	3,480	.....	1 12
Wolland Bros.....	8	11	2	1	270	450	1	1	75	75	8,575	8,575	.....	1 12
Collier's C-O-C Co.	26	26	7	1	242	1,681	1	1	75	75	28,704	28,704	.....	1 10
Sholl Bros.....	35	40	14	2	180	1,488	1	1	\$50	\$55	\$31,835	22,000	9,835	1 06
Sholl Bros.....	40	45	11	1	220	1,821	1	1	\$50	\$55	\$42,700	30,000	12,700	1 06
Con. Coal Co.....	24	28	10	1	189	680	1	1	+	+	\$14,400	10,800	3,600	1 00
Con. Coal Co.....	28	36	17	3	200	1,080	1	1	+	+	\$21,626	15,626	6,000	1 00
Peter Grant & Son	25	40	14	2	202	1,100	1	1	+	+	\$24,067	20,067	4,000	1 00
Royster Bros.....	30	38	15	2	190	830	1	1	+	+	\$22,707	17,139	5,568	1 00
William Grant.....	5	10	4	1	160	280	1	1	\$50	\$55	\$6,600	5,600	1,000	1 00
Vicary Bros.....	13	18	6	1	210	640	2	1	67.5	75	11,875	11,875	.....	1 00
John Glenn.....	6	9	3	1	200	280	1	1	67.5	75	6,430	6,430	.....	1 12
Schmidt & Son.....	7	10	3	1	214	316	1	1	67.5	75	7,840	7,840	.....	1 12
John Allen.....	2	2	1	1	120	21	1	1	.....	75	520	520	.....	1 00
Mrs. K. Mohn.....	3	4	1	1	190	45	1	1	67.5	75	1,280	1,280	.....	1 00
E. Brost.....	4	5	1	1	210	150	1	1	67.5	75	3,400	3,400	.....	1 00
Oliver Brost.....	3	4	1	1	200	143	1	1	67.5	75	2,900	2,900	.....	1 00
Peter Kramp.....	4	8	2	1	200	126	1	1	67.5	75	3,500	3,500	.....	1 00
Frank Rewart.....	3	6	2	1	220	110	1	1	67.5	75	3,200	3,200	.....	1 00
Richard Cody.....	6	12	3	2	210	250	1	1	67.5	75	6,500	6,500	.....	1 00
John Toma.....	2	3	1	1	180	24	1	1	.....	75	580	580	.....	1 00
Dan. Dri-coll.....	2	4	1	1	190	50	1	1	.....	75	1,200	1,200	.....	1 00
Keefe, Mast'sn & Co	4	4	1	1	180	80	1	1	.....	75	1,834	1,834	.....	1 00
J. Birdose & Son..	2	3	1	1	190	56	1	1	.....	75	1,220	1,220	.....	1 00

Name of firm, company or person operating mine.

Tazewell County—Third District—1893.

[illegible]

Peoria County—Third District—1893—Concluded.

Name of firm, com- pany or person op- erating mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.													Av. value of lump coal per ton at the mine.
	Miners em- ployed.		All other em- ployes.	Boys employed under ground.	Running days in the year.	Kegs of powder used during year.	Cas- ual- ties.		Prices paid per ton for hand mining.		Tons of coal mined.			
	Av. during the year.	Highst dur- ing year.					Killed.	Injured.	Sum- mer.	Win- ter.	Total.	Lump coal.	Oth'r grades.	
John Saupe.....	2	3	.....	.....	200	48	.....	.....	\$0 75	.....	1,042	1,042	.....	\$1 00
Fisher & Joos.....	2	3	.....	.....	200	50	.....	.....	75	.....	1,242	1,242	.....	1 00
Wm. Cook.....	1	1	.....	.....	100	12	.....	.....	75	.....	280	280	.....	1 00
James Waite.....	1	2	.....	.....	120	24	.....	.....	75	.....	510	510	.....	1 00
I. Wantling & Son.	35	55	14	2	200	1140	.....	.....	\$0 67.5	75	24,700	24,700	.....	1 10
James Aberley.....	4	10	6	2	130	220	.....	.....	67.5	75	4,800	4,800	.....	1 10
Henry Vicary.....	2	2	.....	.....	140	20	.....	.....	75	.....	450	450	.....	1 00
Thomas Parker.....	3	5	2	1	200	64	.....	.....	67.5	75	1,732	1,732	.....	1 00
Joseph Smith.....	2	3	.....	.....	180	38	.....	.....	75	.....	880	880	.....	1 00
Jesse Stafford.....	1	1	.....	.....	100	10	.....	.....	75	.....	340	340	.....	1 00
C. B. Kramm & Bro	25	48	14	2	140	680	.....	.....	67.5	75	15,830	15,830	.....	1 00
H'wth & Ty'l'r Bros	45	60	14	3	198	1800	.....	.....	67.5	75	43,240	43,240	.....	1 00
Wm. Harper.....	1	2	.....	.....	100	.....	.....	.....	75	.....	400	400	.....	1 00
Wm. Lonsdale.....	1	2	.....	.....	90	.....	.....	.....	75	.....	360	360	.....	1 00
Chas. Edwards.....	5	10	4	1	180	200	.....	.....	67.5	75	4,665	4,665	.....	1 10
Nathan Shaw.....	10	16	8	2	220	560	.....	.....	67.5	75	12,600	12,600	.....	1 10
Hanna Coal Co.....	20	31	12	2	200	1050	.....	.....	* 50	* 55	* 19,775	15,775	4,000	1 05
Hamwood Coal Co.	50	60	23	3	240	3245	.....	.....	.....	.....	† 51,678	44,938	6,740	1 10
John A. Endres.....	2	4	1	.....	210	.....	.....	.....	67.5	75	760	760	.....	1 25
G. W. Langdon.....	3	7	1	1	210	.....	.....	.....	87.5	87.5	1,600	1,600	.....	1 25
P. F. Tully.....	3	6	1	.....	220	.....	.....	.....	87.5	87.5	1,240	1,240	.....	1 25
Joseph Catton.....	2	4	2	1	200	.....	.....	.....	87.5	87.5	980	980	.....	1 25
Joseph Slater.....	2	2	.....	.....	100	.....	.....	.....	87.5	87.5	400	400	.....	1 25
John Heaton.....	2	3	.....	.....	140	.....	.....	.....	87.5	87.5	430	430	.....	1 25
H. Saylor.....	1	2	.....	.....	100	.....	.....	.....	87.5	87.5	320	320	.....	1 25
Chas Berry.....	2	4	2	1	190	.....	.....	.....	87.5	87.5	780	780	.....	1 25
W. Dalrymple.....	2	2	1	.....	90	.....	.....	.....	87.5	87.5	280	280	.....	1 25
G. W. Sanders.....	1	2	.....	.....	100	12	.....	.....	87.5	87.5	320	320	.....	1 25
Wm. Poole.....	1	2	.....	.....	120	.....	.....	.....	87.5	87.5	410	410	.....	1 25
John Jordan.....	2	2	1	.....	180	.....	.....	.....	87.5	87.5	720	720	.....	1 25
Wm. Dodsworth.....	1	2	1	.....	160	.....	.....	.....	87.5	87.5	410	410	.....	1 25
E. Tyler.....	1	2	.....	.....	90	.....	.....	.....	87.5	87.5	310	310	.....	1 25
T. W. Homan.....	1	1	.....	.....	100	6	.....	.....	87.5	87.5	220	220	.....	1 25
Totals.....	736	1062	312	51	.....	28427	2	.....	.....	.....	620,149	537,928	82,221	.....
Averages.....	.....	.....	.....	.....	172	.....	.....	.....	\$0 68.3	\$0 75.6	.....	.....	.....	\$1 06

* Miners paid for gross weight.

† Miners paid by the day.

Tazewell County, 1893—Concluded.

William Rundle ...	17	28	8	2	245	580	.....	.....	*\$ 50	*\$ 55	*13,258	10,258	3,000
L. Grant & Son ...	21	32	6	1	204	620	.....	.....	85	85	13,102	13,102	.....
Bohlander Bros ...	6	15	4	.....	235	240	.....	.....	85	85	5,400	5,400	.....
Jesse Mack.....	2	3	1	.....	200	38	.....	.....	85	85	640	640	.....
Edward Little.....	36	70	12	4	245	1,940	.....	.....	*50	*55	*47,807	39,647	8,160
Jas. Millard & Co.	25	40	11	4	220	970	.....	.....	*50	*55	*24,680	20,480	4,200
Morritz Bros.....	4	7	2	1	240	88	.....	.....	75	75	1,740	1,740	.....
Jacob Schmidt.....	6	16	4	2	280	224	.....	.....	75	75	5,870	5,870	.....
Wm. H. Bowden..	7	14	4	2	250	310	.....	.....	75	75	6,280	6,280	.....
Rusche Bros.....	12	18	4	2	240	488	.....	.....	75	75	10,180	10,180	.....
Totals.....	136	243	56	18	.....	5,498	.....	.....	.....	.....	128,957	113,597	15,360
Averages.....	.....	.....	.....	.....	236	.....	.....	.....	\$0 79.4	\$0 79.4	.....	.....	.....

* Miners paid for gross weight.

[illegible]

Vermilion County, 1893—Concluded.

Name of firm, com- pany or person op- erating the mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.														Av. value of lump coal per ton at the mine.
	Miners em- ployed.		All other em- ployés.	Boys employed under ground.	Running days in the year.	Kegs of powder used during year.	Casualties.		Prices paid per ton for hand mining		Tons of coal mined.				
	Av. during the year.	Highst dur- ing year.					Killed.	Injured.	Sum- mer.	Win- ter.	Total.	Lump coal.	Oth'r grades.		
Con. C. Co., St. L.	43	61	23	5	142	720	..	4	\$0 60	\$0 60	23,464	17,464	6,000	\$0 95	
Elisha Lloyd.....	201	250	60	10	189	2,435	..	8	60	60	150,832	124,268	26,564	95	
John E. Lloyd.....	4	12	3	1	240	176	..	..	60	60	4,300	4,300	..	1 12
Jenkin Bros.....	8	20	4	2	210	210	..	..	60	60	5,826	4,826	1,000	1 12
James Thomas.....	6	14	5	3	250	313	..	..	60	60	6,800	5,800	1,000	1 12
Cross & Wilkinson	2	2	1	..	180	26	..	..	60	60	840	840	..	1 12
Henry Kuhn.....	2	2	..	..	175	20	..	..	60	60	525	525	..	1 12
Aldridge Bros.....	1	1	..	..	120	9	..	..	60	60	280	280	..	1 12
George Bensil.....	4	7	2	1	205	32	..	..	60	60	2,840	2,840	..	1 12
John Gray.....	2	5	2	1	190	27	..	..	60	60	1,640	1,640	..	1 12
Silver Pearl.....	6	16	3	2	250	230	..	..	60	60	7,240	7,240	..	1 12
B. Beddow.....	1	2	..	..	100	10	..	..	60	60	340	340	..	1 12
H. Dettman.....	2	5	2	1	190	25	..	..	60	60	845	845	..	1 00
William Taylor.....	2	5	2	1	220	30	..	..	60	60	1,006	1,006	..	1 00
Stanb'ry & Watkins	4	4	1	..	190	33	..	..	60	60	923	923	..	1 00
William Ray.....	5	10	3	2	235	112	..	..	60	60	4,280	4,280	..	1 12
E. E. lison.....	3	5	2	1	195	52	..	..	60	60	2,100	2,100	..	1 12
Michael McGinsie..	3	5	1	..	220	48	..	..	60	60	1,850	1,850	..	1 12
Arthur Jones.....	2	4	..	..	200	24	..	..	60	60	840	840	..	1 00
Evan J. Jones.....	3	6	2	1	280	90	..	..	55	55	2,476	2,476	..	1 12
Thomas Thomas...	2	2	1	..	160	12	..	..	55	55	410	410	..	1 00
Evan Jones.....	2	3	1	..	234	30	..	..	55	55	1,200	1,200	..	1 00
Eli Sheherd.....	2	3	2	1	180	29	..	..	55	55	780	780	..	1 00
Harry Harris.....	2	2	..	..	100	20	..	..	55	55	500	500	..	1 00
D. France & Son...	2	5	2	1	200	40	..	..	55	55	1,240	1,240	..	1 00
Drake & Son.....	2	2	1	..	185	20	..	..	55	55	680	680	..	1 00
Kellyville C. C. No.1	2	5	2	1	200	45	..	..	55	55	1,500	1,500	..	1 00
No.2	30	50	23	5	195	1,720	1	..	60	60	54,996	43,453	11,543	1 10	
Pawnee Coal Co....	260	320	71	11	255	8,012	1	2	60	60	240,448	218,470	21,978	1 10	
William Kelly.....	80	130	25	5	243	2,560	1	..	60	60	107,945	96,640	11,485	1 05	
Co-op. Min'g Ass'n	4	4	2	1	90	16	..	..	60	60	540	540	..	1 00
Dickason & Frazier	20	25	11	4	215	715	..	..	60	60	22,800	17,800	5,000	1 05
Thos. L. Spellman	40	60	16	3	197	452	..	..	60	60	22,245	15,510	6,775	1 05
A. M. Bushong....	73	91	35	5	201	1,198	1	2	60	60	55,718	41,357	14,361	1 05	
Jas. A. McFowell..	40	60	16	3	246	864	..	..	60	60	39,460	30,860	8,600	1 05
Lucas & Raine.....	6	8	2	..	200	125	..	..	60	60	4,500	3,600	900	1 10
C. & W. Riley.....	4	6	2	1	160	56	..	..	60	60	1,700	1,400	300	1 10
Jonah Jackson.....	2	6	2	1	190	42	..	..	60	60	1,460	1,260	200	1 10
Charles Moran.....	6	10	3	2	235	187	..	..	60	60	6,180	5,600	580	1 10
John Blakely.....	1	2	..	..	160	12	..	..	60	60	420	420	..	1 00
John Ashley.....	2	2	..	..	110	18	..	..	60	60	568	568	..	1 00
John Woodward....	3	6	2	1	220	51	..	..	60	60	1,840	1,840	..	1 00
Middle Fork C. Co.	1	2	..	..	140	12	..	..	60	60	450	450	..	1 00
Glenburn Coal Co..	3	6	2	1	210	42	..	..	60	60	1,120	1,120	..	1 00
Muncie Coal Co....	60	80	19	5	210	2,012	4	..	*48	*48	63,500	63,500	..	80	
George W. Benson	47	67	18	3	204	1,750	..	1	*48	*48	45,338	45,338	..	80	
Alex. Bonnett.....	6	8	7	..	90	56	1	..	60	60	1,200	1,200	..	1 10	
Con. C. Co. of St. L.	2	4	2	1	200	32	..	..	60	60	860	860	..	1 00
Kellyville Coal Co	4	8	3	2	210	86	..	..	60	60	2,460	2,460	..	1 00
Mozier & Wilson...	..	..	30	..	220	..	..	..	..	..	60,443	53,558	6,885	95
George Watts.....	..	..	30	..	180	..	..	..	..	..	18,200	18,200	..	1 10
John Barton.....	..	..	5	..	90	..	..	..	..	..	3,860	3,860	..	1 00
Thomas Frazee.....	..	..	4	..	100	..	..	..	..	..	3,060	3,060	..	1 00
Jenkus Bros.....	..	..	4	..	100	..	..	..	..	..	3,200	3,200	..	1 00
William Smith.....	..	..	3	..	100	..	..	..	..	..	1,500	1,500	..	1 00
Jesse Shaffer.....	..	..	4	..	90	..	..	..	..	..	1,560	1,560	..	1 00
John C. Williams..	..	..	4	..	90	..	..	..	..	..	1,680	1,680	..	1 00
Jacob Clifton.....	..	..	1	..	100	..	..	..	..	..	530	530	..	1 00
George Kennedy....	..	..	1	..	60	..	..	..	..	..	260	260	..	1 00
John W. Johns.....	..	..	2	..	40	..	..	..	..	..	320	320	..	1 00
Totals.....	1,012	1,413	526	89	..	24836	5	21	..	..	996,768	873,597	123171	..
Averages.....	..	..	..	..	173	..	..	..	\$0 59.9	\$0 59.9	..	..	..	\$1 01

* Miners paid for gross weight.

Woodford County—Third District—1893.

Name of firm, company or person operating mine.	Town or postoffice nearest the mine.	CHARACTER OF PLANT.											Estimated number of acres worked out during the year.	
		Drift, Slope, Shaft.	Power — Steam, Horse or Hand.	Shipping or Local mine.	Hand or Machine mine.	Long-wall or Pillar-and-Room.	Old, New or Abandoned mine.	Paid weekly, semi-monthly or monthly.	Depth below the surface—feet.	Thickness of seam—feet and inches.	Geological number of seam.			
Chi. & Min. C. & T. Co.	Minonk	Sh.	St.	Sh.	H.	L.	W.	O.	S.	M.	550	2.6	2	25.7
Roanoke Mining Co.....	Roanoke										480	2.4	2	17.5
Totals (2 mines).....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	43.2
Averages.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Recapitulation of Coal Mines by Counties—

COUNTIES.	MINES.						MINERS.									
	Number of mines.	Shipping mines.	Mines in local trade.		Estimated number of acres worked out during year.	No. of miners and other employes.				Average number of running days.	Number of kegs of powder used.	Cas-ualties.				
			New mines.	Abandoned mines.		Average No. of miners.	Highest No. of miners.	No. of other employes.	No. boys un-der ground.			Killed.	Widows.	Children.	Injured.	
Cass	3	1	2	1	5.58	25	41	15	3	265	920	..	..	..	1
Fulton	72	21	51	2	10 159.09	915	1,214	363	63	156	24,819	1	..	..	13
Logan	3	3	..	..	37.3	162	203	95	13	258	7,170	1	1	3	9
McLean	3	3	..	..	39.5	255	350	86	14	262	1,580	2	2	2	1
Menard	4	6	3	1	46.87	233	361	181	16	200	8,578	1	..	..	3
Peoria	72	24	48	3	198.43	736	1,062	312	51	172	28,427	2	..	..	..
Tazewell	10	3	7	1	25.29	136	243	56	18	236	5,498	..	..	..	..
Vermilion	62	21	41	4	10 144.66	1,012	1,413	526	89	173	24,836	5	2	8	21	
Woodford	2	2	..	..	43 2	290	347	95	19	252	.....	..	..	..	3
Totals	236	84	152	6	26 639.92	3,764	5,234	1,730	286	.....	101,828	12	5	13	51
Averages .....	..	..	..	..	..	..	..	..	..	174	.....	..	..	..	..

Whole number of openings reported in 1892, 251.

Number of new mines or places opened during the year, 6.

Number of mines exhausted or abandoned during the year, 26.

Whole number of openings reported for 1893, 236.

Woodford County, 1893—Concluded.

Name of firm, company or person operating the mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.												Av. value of lump coal per ton at the mine.
	Miners em- ployed.		All other em- ployes.	Boys employed under ground.	Running days in the year.	Kegs of powder used during year.	Cas- ual- ties. Killed. Injured.	Prices paid per ton for hand mining		Tons of coal mined.			
	Av. during the year.	Highest dur- ing year.						Sum- mer.	Win- ter.	Total.	Lump coal.	Oth'r grades.	
C. & M. C. & T. Co.	175	220	61	11	280	.....	1	\$* 70	\$* 77.5	*109,948	97,748	12,200	\$1 40
Roanoke Min'g Co.	115	127	35	8	223	.....	2	82.5	90	70,183	64,183	6,000	1 40
Totals	290	347	96	19	.....	.....	3	.....	.....	180,131	161,931	18,200	.....
Averages ...	.....	.....	.....	.....	252	.....	.....	\$0 82.5	\$0 90	.....	.....	.....	\$1 40

* Miners paid gross weight.

Third Inspection District, 1893.

COUNTIES.	PRICES AND PRODUCTS.						Average value of coal per ton at the mine.		Aggregate value of total products,
	Average prices for hand-mining.			Tons of coal mined.			Lump.	Other grades	
	Sum-mer.	Win-ter.	Av'rage for the year.	Total tons.	Tons of lump.	Tons of other grades			
Cass	\$0 68.6	\$0 78.56	\$0 75.25	23,150	21,370	1,780	\$1 30.9	\$0 50.6	28,855
Fulton	0 68.28	0 75.7	0 73.32	772,497	610,854	161,643	1 08.68	0 41.23	730,518
Logan	0 51	0 51	0 51	189,319	157,699	31,620	1 02.5	0 50	177,418
McLean	*	*	*	204,827	153,027	51,800	1 20.5	0 36.3	203,183
Menard	0 49	0 56.7	0 54.23	281,635	230,296	51,339	0 98.6	0 32.1	243,494
Peoria	0 68.3	0 75.6	0 72.9	620,149	537,928	82,221	1 06.18	0 25.4	592,015
Tazewell	0 79.4	0 79.4	0 79.4	128,957	113,597	15,360	1 06.86	0 49.8	128,047
Vermilion	0 59.93	0 59.93	0 59.93	996,768	873,597	123,171	1 01.5	0 30.1	923,501
Woodford.....	0 82.5	0 90	0 87.5	180,131	161,931	18,200	1 40	0 38.6	233,727
Totals				3,397,433	2,860,299	537,134			\$3,260,758
Averages...	\$0 62.1	\$0 65.51	\$0 65.3				\$1 07.4	\$0 35.6	

* See county table.

FOURTH INSPECTION DISTRICT---1893.

MR. GEORGE A. SCHILLING,

Secretary of the State Bureau of Labor Statistics, Springfield, Ill.

SIR:—In compliance with section twelve of the mining law of the State, defining the duties of State Inspectors of Mines, I herewith submit the tenth annual report of the Fourth District for the year ending July 1, 1893.

The following report gives tabulated statements showing the number of collieries operated by steam power; also mines operated by horse and hand power; shipping mines and local; new mines and abandoned mines; also giving the depth of shafts; elevation of cover over the coal in drifts; the thickness of the coal; the geological number of the seam; the estimated number of acres worked out during the year; the number of hand and machine mines; how the coal is worked, long-wall or pillar-and-room; if blasted off the solid or under-cut; the system of under-ground haulage; the ventilation, showing the capacity in cubic feet of air per minute produced at all the larger mines; the average number of miners employed, with the highest number employed at any one time during the year; all other employes around the mine, with the number of boys employed under ground; the number of days worked, with an average for each county and the district; the number of kegs of powder used during the year; the price of mining for both summer and winter; the price paid per day for hand-mining; the wages at machine mines; the casualties, both fatal and non-fatal; the total tonnage of the mines, including lump coal and all other grades sold or consumed at the mines; the average value per ton of lump coal at the mines, with the aggregate value of the total product; the number and kind of coal-cutting machines in use; also the number of men employed cutting and handling the same, with a tabulated statement of the wages paid; a detailed list of the general improvements made in and around the mines during the the year; a tabulated record of all fatal and non-fatal accidents, with a recapitulation of all the mining counties in the district.

The following summaries are presented:

Total number of mines	104
Shipping mines	59
Local mines	45
New mines	6
Abandoned or exhausted mines	11
Estimated number of acres worked out during the year	798.50
Number of employes	3,231
Highest number employed at any one time during the year	4,152
Number of other employes in and about the mines, including 141 boys	2,869
Total number of employes	7,021
Average number of working days for the district	236
Total number of kegs of powder used	101,623
Average price for mining in summer	\$0 55
Average price for mining in winter	0 55.91
Number of tons of lump coal produced	4,508,382
Number of tons of other grades produced	1,276,484
Total number of tons for the district	5,784,866
Average value per ton of coal at the mines	\$0 83.6
Aggregate value of total product	\$4,160,922
Number of coal-cutting machines used	187
Output in tons by machines	2,914,902
Number of employes operating machines	2,230
Number of fatal accidents	10
Number of non-fatal accidents	67
Total number of accidents	77
Number of wives made widows	3
Number of children left fatherless	7
Number of employes to each fatal accident	702
Number of employes to each non-fatal accident	105
Number of tons for each fatal accident	578,487
Number of tons for each non-fatal accident	86,341

Improvements.—The following is a detailed list of the various improvements made in and around the mines during the fiscal year:

In Bond county the Sorento Coal Co. has put in a plant to mine the coal by machinery, an Ingorsoll compressor and Ingorsoll coal-cutting machines. Two new boilers have been added to the plant.

In Christian county the Pana Coal Co. has put in a new fan at its No. 1 colliery; the fan is 18 feet in diameter, and erected on the Guibal principle; the fan is set about 75 feet from the upcast shaft, the air being carried to the fan by a brick tunnel; the engine is geared direct to the fan-wheel. The endless rope has been put in so as to travel in both intake and return entries, leading from the main shaft, which is a great improvement, making a double track for the rope in all parts of the mine.

In Macoupin county the Consolidated Coal Co. in the No. 6 colliery at Staunton, has made two new main entries, making four main entries, leading from the bottom of the shaft; double haulage track has been extended in all parts of the mine; the 20-foot fan and casing have been improved, so that with 72 revolutions per minute a water gauge is shown of 14-10 inches, and a quantity of 92,000 cubic feet of air per minute; in

the No. 7 colliery the air-courses have been enlarged, and several thousand feet of double track have been put in; the system of working the coal has been changed; the rooms and entries are now worked by the *cleat*, which is a great improvement, as regards safety, and producing larger lump coal; two new boilers have been put in; in the No. 8 colliery at Mt. Olive the air-courses have been enlarged and a double track extended; a new stable has been erected, with 30 stalls, each 6 feet wide and 9 feet high, with water connections taken from the surface by pipes; in the No. 10 colliery the air-courses have been enlarged and a double track extended, increasing the volume of air very largely; at the No. 9 shaft, or the fan shaft for Nos. 8 and 10 collieries, a pair of engines have been put in for working the fan; the cylinders are each 18x36 inches; a double-ply belt 30 inches wide is used to work the 30-foot fan; the fan running 62 revolutions per minute shows a water gauge of 2 2-10 inches, with a volume of 163,000 cubic feet of air passing each minute, this air is used to ventilate Nos. 8 and 10 collieries.

At the Carlinville Coal Co.'s colliery a new elevator has been erected, with proper conveyors for taking the small coal to the revolving screen from both main and local chutes; the air-courses have been improved in the under-ground works so as to materially increase the ventilation; the Girard Coal Co. has put in 3 new boilers, increased the double haulage track in the mine; new air-courses have been made, which has increased the ventilation.

The Virden Coal Co. has put in a new elevator during the year; also 2 new boilers.

In Madison county the Consolidated Coal Co. has put in two new boilers at its No. 3 mine, Collinsville; also extended the double track in the mine; the air-courses have been enlarged, which has given increased ventilation; at the Heintz Bluff colliery two new boilers have been put in; 2,100 feet of double track have also been put in, and the air-courses improved; at this colliery the north side of the shaft is ventilated by an auxiliary fan, which, up to this time, has always been in the mine, at the foot of the upcast; the fan has been removed to the surface and put up in an improved manner, which has increased the ventilation.

The Madison Coal Co. has erected a new fan at its No. 3 colliery, Edwardsville; the fan is 15 feet in diameter; engine geared direct; the air-courses have been greatly enlarged; the air is split at suitable points, which has doubled the ventilation; double track has been put in on both main entries leading from the main shaft.

In Sangamon county the Springfield Coöperative Coal Co. has erected a new 14-foot fan; the Barclay Coal Co. has put in a new 15-foot fan; the Black Diamond Coal Co. has put in a new 15-foot fan; new elevators have been put in by the Sangamon Coal Co., Starnes Coal Co. and the Woodside Coal Co.

Escapement Shafts.—The Penwell colliery and the Springside colliery at Pana have completed the opening between the two shafts for escapement

for both shafts; the Taylorville Coal Co. has also completed an opening between its Nos. 1 and 2 shafts, for escapement.

New Mines.—The Moweaqua Coal Co., Moweaqua, Shelby county, has put its new shaft in operation during the year; the mine is located adjoining the south line of the village of Moweaqua, and on the line of the Illinois Central Railroad; the seam of coal is No. 5 of the geological section, and has an average of 5 feet 6 inches in thickness; the plant erected is first-class in every particular and intended for a large output; a pair of Litchfield engines, 20' x 36'', for hoisting, ample boiler power and everything well arranged on the surface for handling coal cheaply. The Chicago-Virden Coal Co., of Macoupin county, has put its new shaft in operation during the year; this shaft was sunk by the late Wm. Beard, of Springfield, Ill.; the Chicago-Virden Coal Co. bought the property of the heirs; the coal seam will average $7\frac{1}{2}$ feet in thickness; the company is putting in a good plant; Litchfield engines, 20' x 36'', double, and the Russell-Parsons self-dumping cage; the shaft is located near the northern limits of the village of Virden. The Sugar Creek Coal Co. has finished sinking its new shaft near Auburn, Sangamon county; the seam is 8 feet in thickness, and of good quality; in putting up the plant, all of the latest improvements will be adopted; Litchfield engines, 18' x 36'', ample boiler power, substantial tower and out-housing, with over one-half mile of side tracks for handling the coal. The Citizens' Coal and Mining Co., of Springfield, has just finished sinking its new shaft; this shaft is located near the west limits of West Springfield, and on the line of the Chicago, St. Louis & St. Paul Railroad; the Springfield seam No. 5 was found at a distance of 201 feet, and of the usual thickness, 5 feet 6 inches.

The Chesterfield Coal Co. is opening out its shaft again; the mine has been stopped for a number of years, owing to not having an escapement shaft; a new company has been organized, and are now at work taking out the water with a view of working the mine; the shaft is located on the Chicago, St. Louis & St. Paul Railroad, adjoining the village of Chesterfield, Macoupin county. The Enterprise Coal Co., of Smithboro, Bond county, abandoned its shaft one year ago; a new company has been formed and are now taking out the water with a view of opening out the mine, and sinking to a lower seam of coal, which is known to be at a certain depth by the prospecting drill when the coal-field was first prospected.

The Madison Coal Co. has finished sinking its new No. 4 mine; this mine is located about one mile east of the village of Glen Carbon, in Madison county, on the line of the St. Louis & Eastern Railroad; the coal seam has an average of $7\frac{1}{2}$ feet, with a strong limestone roof; the seam of coal is well situated for machine-mining; a modern plant is now being erected with a view of a large output.

The six new mines, as shown by the county schedules, two are in Macoupin county, The Chicago-Virden Coal Co., and a small local mine at Chesterfield; one new mine in Sangamon county, the Williamsville Coal Co., and three small mines, one in Jasper county, one in Richland and one in Cumberland.

Abandoned Mines.—Only one steam colliery has been abandoned during the year, The Enterprise Coal Co., of Smithsboro, Bond county. Seven small local mines have been abandoned in Greene county and three in Scott county.

Prospective Mines.—The Strasburg Coal Co. is sinking a new shaft at Strasburg, Shelby county, on the line of the Wabash railroad. As this is in the center of the Illinois coal basin, the shaft will have to go to a great depth to find a paying coal seam. The Vandalia Coal Co., Fayette county, has stopped prospecting at present; they sunk over 400 feet, and have met with large bodies of water; however, they have not abandoned the idea of having a coal shaft; the American Coal Co. is sinking a new shaft at Moweaqua, in Shelby county; the coal having been proved by the Moweaqua Coal Co., the village of Moweaqua can boast in the near future of having two coal shafts. The Christian County Coal Co. is sinking a new shaft at Taylorville, on the line of the Wabash railroad; as the coal has been proved by the Taylorville Coal Co. with their No. 1 and 2 shafts; the coal seam at Taylorville is 8 feet thick, with a strong roof; it is very expensive sinking at Taylorville owing to a large body of quicksand to be passed through, some 40 feet thick in one body, and some smaller seams or beds of quicksand; the first part of the sinking has to be done by drop shafts for a distance of 80 feet, they by running shoe; the city of Taylorville will boast of three large shafts in the near future.

Mining Machines.—There are now 18 collieries in this district operated by coal-cutting machines, viz.: Abbey No. 3 and Heintz Bluff collieries at Collinsville; Troy colliery, at Troy; Nos. 6 and 7 collieries, at Staunton; Nos. 8 and 10 and Mount Olive Coal Co. collieries, at Mount Olive; Gillespie colliery, at Gillespie; St. Barnard colliery, at Clyde; Nos. 1 and 2 collieries, at Glen Carbon; No. 3 colliery, at Edwardsville; Wilmington and Springfield colliery, at Ridgely; Girard colliery, at Girard; Taylorville No. 1 colliery, at Taylorville; Edinburg colliery, at Edinburg, and Sorento Coal Co., at Sorento. The Bunker Hill Coal Co. has put in a small compressor, and are now about to commence operating coal-cutting by machinery. The new No. 4 colliery of the Madison Coal Co. will be operated by coal-cutting machines.

Condition of the Mines.—The mines in the district, with a very few exceptions, are in a safe and healthy condition; all the mines in the district where fire-damp is generated are well ventilated, well managed and a proper discipline is kept up at all times; the mines in Sangamon county have been improved in regard to ventilation during the year, for which part of the credit is due to Mr. George Morgan, County Inspector of Mines, who has ably assisted me during the year.

The Product.—The district shows a large gain in output during the year on lump coal, and also on inferior grades. The gain is 417,461 tons, and the gain including other grades than lump is 249,805 tons. The principal gain has been in the counties of Sangamon, Christian, Madison, Macoupin, Montgomery and Macon. Bond county shows a loss owing to the stoppage of the Enterprise colliery, at Smithsboro.

Fatal Accidents.—July 19, 1892, Peter Lenhardt, machine helper, aged 34 years, was killed by falling coal in the Madison Coal Co.'s mine No. 2, at Glen Carbon. He was shoveling from the machine runner at the working face, when a large piece of coal fell and caught him. He was a single man.

August 5, 1892, August Runge, blacksmith, aged 28 years, was killed by falling down the shaft of the Pana Coal Co.'s mine No. 1, at Pana. He was repairing the cage, on which he was standing, and was about two feet above the stops. The mine manager told him to get off the cage and he would have the engineer lower it on to the stops. Runge said he would stay on the cage. The signal was given to lower the cage, but before lowering, it went up about six feet. Runge, it seems, got frightened and jumped off. He struck his head against a cross-timber, which threw him into the shaft. He left a widow and two children.

November 3, 1892, Phillip Aldefer, timberman, aged 33 years, was killed by falling slate at the working face of a room in the Consolidated Coal Co.'s mine No. 7, at Staunton. He left a widow and two children.

November 21, 1892, John Meakin, driver, aged 22 years, was killed in the Springside colliery, Pana. He was squeezed between a mule and a pit-car, which injured him internally, from which he died. He was a single man.

December 27, 1892, Louis De Nries, machine runner, aged 22 years, was killed in the Consolidated Coal Co.'s mine No. 6, at Staunton, by coal falling on him, while working his machine at the face of a room. He was a single man.

January 6, 1893, John M. Hubbard, miner, age unknown, was killed by a premature blast in the Woodside Coal Co.'s mine at Iles' Junction. He was a single man.

January 29, 1893, Chas. Whitteker, miner, aged 19 years, was killed in the Clear Lake Coal Co.'s mine by a blast let off in the room next to his. It appears he was not notified in time to get out of the way.

February 8, 1893, Jos. D. Osland, miner, aged 18 years, was killed by falling coal in the Pana Coal Co.'s mine No. 2, at Pana. He was working in the under-mining when the coal fell. He was a single man.

March 14, 1893, Oscar Reiter, machine runner, aged 29 years, was killed in the Consolidated Coal Co.'s mine No. 6, at Staunton. A piece of slate, three feet wide, four feet long, and from four to five inches thick, fell out of the side of the room and caught him as he was preparing to start his machine. He left a widow and three children.

May 21, 1893, John Widitz, miner, aged 21 years, a single man, was killed by falling slate in the Madison Coal Co.'s mine at Edwardsville. He and others were engaged in taking down coal and slate on the entry, for a double track. A piece of slate fell and caught him.

Fatal Casualties—Fourth District—1893.

Date.	Name.	Age.	Occupation.	Residence.	Married.	Widow.	Children.	Single.	Dependents.	Cause of Accident.
1892.										
July 19	Peter Lenhardt.....	34	Mch. helper.	Glen Carb'n	..	..	1	..	..	Falling coal
Aug. 5	Ernest Runge.....	26	Blacksmith.	Pana.	1	1	2	..	3	Falling down shaft ..
Nov. 3	Phillip Aldefer.....	33	Timberman.	Staunton....	1	1	2	..	3	Falling slate.....
" 21	John Meaken.....	22	Driver	Pana.....	..	..	1	..	..	Squeezed between mule and pit-car...
Dec. 27	Louis De Nries.....	22	Mch. runner	Staunton....	..	..	1	..	..	Falling coal.....
1893.										
Jan. 6	John M. Hubbard....	..	Miner	Iles Junct'n.	..	..	1	..	..	Premature blast.....
" 29	Chs. Whitteker	19	Miner	Sp'ingfield..	..	..	1	..	..	Premature blast.....
Feb. 8	Jos. D. Osland.....	18	Miner	Pana.....	..	..	1	..	..	Falling coal.....
Mar. 14	Oscar Reiter	29	Mch. runner	Staunton....	1	1	3	..	4	Falling slate.....
May 21	John Widitz.....	21	Miner	Edwardsv.	..	..	1	..	..	Falling slate.....
	Totals.....	..	..	..	3	3	7	7	10	

RECAPITULATION OF FATAL CASUALTIES, FOURTH DISTRICT, 1893.

Residence.	No.	Occupation.	No.	Cause.	No.	Colliery.	No.
Edwardsville...	1	Blacksmith ..	1	Falling coal	3	Clear Lake Coal Co	1
Glen Carbon ..	1	Driver	1	Fall. down shaft..	1	Consolidated C. Co.	3
Iles Junction...	1	Mach. helper.	1	Falling slate.....	3	Madison Coal Co ..	2
Pana.....	3	Mch. runners.	2	Premature blast.	2	Pana Coal Co	2
Springfield ..	1	Miners	4	Squeeze between mule & pit-car..	1	Springside Coal Co	1
Staunton	3	Timberman ..	1	..	1	Woodside Coal Co.	1
Totals.....	10	.....	10	.....	10	.....	10

Non-Fatal Casualties—Fourth District—1893.

Date.	Name.	Age.	Residence.	Married.	Children.	Single.	Dependents.	Character of Injury and Cause of Accident.	Time lost—days.
1892.									
July 5	Mich Janeskeek ...	45	Collinsville..	..	..	1	..	Legs injured by falling coal.....	72
" 11	Jule Grisey.....	30	Gillespie ...	1	4	..	5	Body injured by falling coal.....	60
" 13	John Miller	30	Girard .....	..	..	1	..	Body injured by falling slate	*
" 20	P. McAllister.....	37	Nilwood .....	..	..	1	..	Legs both broken by standing blas'	180
" 20	Jos. Maheta.....	21	Staunton .....	..	..	1	..	Body injured by falling coal.....	45
" 29	J. O'Brien.....	21	Pana.....	..	..	1	..	Shoulder broken by pit-cars	42
Aug. 2	Thos. Coyne.....	34	Carlinville..	1	4	..	5	Body injured by falling slate.....	65
" 5	F. Lange	44	Mt. Olive ...	1	4	..	5	Body injured by falling coal.....	30
" 30	Robt. Reihl.....	36	Staunton .....	..	..	1	..	Body injured by falling coal.	32
" 31	Chris Kusmiller ..	20	Staunton .....	..	..	1	..	Back and head injured by pit-car	45
Sept. 27	Edwin Roberts	38	Staunton .....	..	..	1	..	Arm broken by falling coal.....	92
" 30	Fred Kopp	48	Girard .....	..	..	1	..	Leg broken by falling coal.....	116
Oct. 3	Fred Griser.....	25	Pana.....	..	..	1	..	Thumb cut off by cage	40
" 23	Wm. Sanners	32	Glen Carb'n	..	..	1	..	Leg broken by pit-cars.....	90
" 24	John Vargo	26	Glen Carb'n	..	..	1	..	Body injured between pit-cars...	60
" 24	Calvin Tracy.....	30	Girard .....	..	..	1	..	Body injured falling under pit- cars.....	30
" 27	Robt. Herman	20	Staunton .....	..	..	1	..	Body injured between pit-cars ..	110
Nov. 18	A. Comrate.....	23	Pana.....	..	..	1	..	Leg broken by falling coal.....	58
" 30	John Lindsey.....	21	Pana.....	..	..	1	..	Arm broken by pit-cars	*

Non-Fatal Casualties—Fourth District—Concluded.

Date.	Name.	Age.	Residence.	Married.	Children.	Single.	Dependents.	Character of Injury and Cause of Accident.	Time lost—Days.
1892.									
Dec. 2	Nich. Hebert.....	32	Girard.....	1	3	..	4	Body injured by falling coal.....	*
6	John Yesko.....	36	Mt. Olive ...	1	4	..	5	Collar-bone broken by falling coal.....	42
" 7	Pat Manion.....	32	Carlinville..	..	1	..	1	Leg broken by falling slate.....	32
" 9	H. Rayhill.....	18	Pana.....	..	1	..	1	Arm broken by kick of mule.....	40
" 11	Peter Walker.....	43	Glen Carb'n	1	3	..	4	Leg broken by kick of mule.....	110
" 17	Wm. Stille.....	23	Glen Carb'n	1	2	..	3	Body injured by falling coal.....	30
" 19	Andrew Jacobs.....	38	Glen Carb'n	..	1	..	1	Leg broken by falling slate.....	75
" 27	Wm. Neihoff.....	30	Girard.....	..	1	..	1	Shoulder-bone broken by falling coal.....	62
1893.									
Jan. 2	Wm. Senault.....	30	Pana.....	..	1	..	1	Leg broken by falling coal.....	132
" 3	Aug. Buckner.....	42	Staunton.....	..	1	..	1	Body injured by falling slate.....	45
" 10	Andrew Robson.....	47	Carlinville..	1	3	..	4	Foot mashed by falling slate.....	26
" 12	F. Morris.....	28	Carlinville..	1	2	..	3	Body injured by premature blast	42
" 12	Geo. Flint.....	25	Taylorville..	1	2	..	3	Head injured by kick of mule.....	32
" 16	Jac. Bergner.....	48	Collinsville..	..	1	..	1	Body injured by falling coal.....	95
" 16	John Higson.....	34	Girard.....	..	1	..	1	Leg broken (two places) by premature blast.....	122
" 17	Lewis Eads.....	29	Glen Carb'n	1	3	..	4	Leg injured by pick falling down shaft.....	40
" 23	Chs. Boss.....	32	Springfield..	..	1	..	1	Collar-bone broken by pit-cars..	32
" 23	Jac. Yeager.....	25	Staunton.....	..	1	..	1	Body injured by falling slate.....	62
" 23	Scott Welch.....	22	Glen Carb'n	..	1	..	1	Body injured by falling slate.....	42
" 24	Wm. Hebenstreit..	15	Staunton.....	..	1	..	1	Arm broken by pit-cars.....	62
" 24	Robert Iole.....	30	Taylorville..	1	1	..	2	Leg injured by falling slate.....	45
" 24	J. Moliski.....	32	Pana.....	..	1	..	1	Head and back bruised by falling coal.....	60
Feb. 6	W. Lynch.....	40	".....	..	1	..	1	Wrist broken, run over by pit-car	121
" 17	Patrick Howard.....	25	Dawson.....	..	1	..	1	Leg broken by falling slate.....	94
" 20	Henry Mull.....	28	Staunton.....	..	1	..	1	Knee-cap broken by falling slate	52
" 23	Chs. Arwold.....	30	Virden.....	1	1	..	2	Body injured by falling slate.....	62
Mar. 13	Jacob Johnson.....	24	Staunton.....	..	1	..	1	Body injured by falling coal.....	32
" 14	Andrew Ayner.....	22	Pana.....	1	..	..	1	Leg broken by pit-cars.....	*
" 16	Aug. Nowatsky.....	30	GlenCarbon	..	1	..	1	Body injured by falling slate.....	35
" 21	Geo. Laycock.....	36	Girard.....	1	2	..	3	Arm injured by railroad cars.....	†
" 22	Aug. Fuchs.....	40	Staunton.....	1	6	..	7	Body injured by falling on crow-bar.....	62
" 23	Wm. Sicher.....	44	".....	..	1	..	1	Body injured by falling slate.....	60
" 31	Benj. Lecker.....	56	Springfield..	1	4	..	5	Leg broken by falling coal.....	110
Apr. 5	Nich. Giebel.....	22	Starne.....	..	1	..	1	Body injured by pit-cars.....	35
" 6	Peter McLain.....	35	Pana.....	1	1	..	2	Hand mashed by pit-cars.....	42
" 16	Thomas Morton.....	30	".....	1	1	..	2	Arm broken by pit-cars.....	40
" 18	Geo. Streigle.....	15	Hillsboro.....	..	1	..	1	Hip dislocated under pit-cars.....	*
" 20	James Sloane.....	27	Iles' Junct'n	1	2	..	3	Back injured by falling slate.....	32
" 21	Mike PuZitas.....	28	Pana.....	1	..	..	1	Leg broken by falling slate.....	60
" 21	Max Ott.....	19	Staunton.....	..	1	..	1	Arm dislocated between pit-cars	30
" 22	John W. Howard.....	30	Starne.....	1	4	..	5	Back and leg injured by cage.....	42
May 12	Mike Rennan.....	30	Mount Olive	1	2	..	3	Leg broken by pit-cars.....	*
" 12	Geo. Lohman.....	58	Edw'dsville..	1	4	..	5	Leg broken by falling coal.....	*
" 13	John Robinson.....	21	Starne.....	..	1	..	1	Hand injured by pit-cars.....	30
" 24	Fred Peters.....	24	Iles' Junct'n	..	1	..	1	Body injured by falling slate.....	22
June 13	Chs. Roleski.....	35	Pana.....	1	3	..	4	Leg broken by falling coal.....	*
" 22	John Bean.....	40	Springfield..	1	7	..	8	Body burned by explosion of powder.....	*
" 24	T. Jacobs.....	32	Pana.....	..	1	..	1	Collar-bone broken by falling coal	*
	Totals.....			26	72	41	98		†

* Not recovered July 1, 1893.

† Amputated.

‡ An average of 61 days to 56 men reported.

RECAPITULATION OF NON-FATAL CASUALTIES, FOURTH DISTRICT, 1893.

Residence.	No.	Occupation.	No.	Cause of Accident	No.	Colliery.	No.
Carlinsville	4	Blasters	4	Blast explosions.	4	Carbon Coal Co....	1
Collinsville	2	Cagers	5	Cages	2	Carlinsville Coal Co.	4
Dawson	1	Drivers.....	18	Falling coal	20	Consol. Coal Co....	19
Edwardsville..	1	Foreman.....	1	Fall'g on crow-b'r	1	Girard Coal Co....	7
Gillespie.....	1	Loaders.....	18	Falling rock, slate	17	Hillsboro Coal Co..	1
Girard.....	7	Mach. Run'rs	3	Kick by mules...	3	Madison Coal Co...	9
Glen Carbon...	8	Miners.....	16	Pick fall'g d'n sh't	1	Pana Coal Co.....	5
Hillsboro	1	Timberers ...	2	Pit-cars	18	Penwell Coal Co...	4
Iles' Junction...	2			Railroad cars	1	Sp'gfl'd C. & T. Co.	2
Mt. Olive	3					Sp'fl'd June. C. Co.	1
Nilwood	1					Springfield C. Co..	5
Pana.....	14					Starnes Coal Co. ...	3
Springfield	3					Taylorville C. Co...	2
Starne	3					Viriden Coal Co....	1
Staunton.....	13					Wabash Coal Co....	1
Taylorville.....	2					W. Spr'field C. Co.	1
Viriden	1					Woodside Coal Co.	1
Totals	67		67		67		67

Table showing the number of persons injured, nature of injuries, time lost, with averages and percentages.

Nature of Injuries.	No.	Married.	Single.	Dependents.	TIME LOST.		Percent of injuries.
					Total days.	Average days.	
Arms broken.....	*5	1	4	2	234	53	7.4
Arms injured.....	*2	1	1	3	30	30	3
Backs injured.....	3	2	1	8	119	40	4.5
Bodies injured.....	†24	9	15	42	1,056	50	36
Collar-bones broken	*3	1	2	5	74	37	4.5
Feet injured.....	1	1	.....	4	26	26	1.5
Fingers injured.....	1	.....	1	.....	40	40	1.5
Hands injured.....	2	1	1	2	72	36	3
Heads injured.....	2	1	1	3	92	46	3
Hip injured.....	11	.....	1	.....	.....	.....	1.5
Knee-cap broken.....	1	.....	1	.....	52	52	1.5
Legs broken	§16	7	9	23	1,239	103	24
Legs injured.....	3	2	1	6	157	52	4.5
Shoulders injured	2	.....	2	.....	104	52	3
Wrist broken.....	1	.....	1	.....	121	121	1.5
Totals	67	26	41	98	3,416	61	100.00

* One man unable to work July 1, 1893.

† Three men unable to work July 1, 1893.

‡ Unable to work July 1, 1893.

§ Four men unable to work July 1, 1893.

The tables that follow give the detailed information of all collieries in the district with a recapitulation by counties.

Respectfully submitted,

WALTON RUTLEDGE,

State Inspector Fourth District, Alton, Ill.

Bond County, 1893—Concluded.

Name of firm, com- pany or person op- erating mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.													Av. value of lump coal per ton at the mine.
	Miners em- ployed.		All other em- ployes.	Boys employed under ground.	Running days in the year.	Kegs of powder used during year.	Cas- ualties.		Prices paid per ton for hand mining		Tons of coal mined.			
	Av. during the year.	High'st dur- ing year.					Killed.	Injured.	Sum- mer.	Win- ter.	Total.	Lump coal.	Oth'r gra- des.	
Sorento Coal Co...	50	80	24	4	236	1,851	..	..	*	*	78,600	56,120	22,480	\$0 82
Totals	50	80	24	4	...	1,851	..	..	.....	.....	78,600	56,120	22,480	.....
Averages ...	.....	.....	.....	.....	236	.....	..	..	.....	.....	.....	.....	.....	\$0 82

* Machine mine.

Calhoun County, 1893—Concluded.

Thomas Press B.C.	12	14	2	....	270	210	..	..	\$1 00	\$1 00	4,584	4,584	.....	\$2 00
Totals	12	14	2	....	....	210	..	..	.....	.....	4,584	4,584	.....	.....
Averages ....	.....	.....	.....	.....	270	.....	..	..	\$1 00	\$1 00	.....	.....	.....	\$2 00

Christian County, 1893—Concluded.

Pana C. Co. Nos. 1, 2	180	240	130	10	200	1,500	2	5	\$0 45	\$0 45	246,118	200,000	46,118	\$0 75
Penwell Colliery ..	175	220	61	11	224	1,352	..	4	*30	*30	222,439	122,341	100,098	85
Springside O'liery	115	150	65	5	182	625	1	5	*32	*32	125,519	72,000	53,519	75
Taylorville Coal Co.	100	120	26	6	271	1,400	..	2	†	†	195,263	158,522	36,741	77
Edinburg Coal Co.	42	46	6	....	260	463	..	..	†	†	31,881	26,419	5,462	83
Assumption C. Co.	25	30	10	....	240	....	..	..	*55	*55	18,430	14,320	4,110	1 15
Totals	637	806	298	32	....	5,340	3	16	.....	.....	839,650	593,602	246,048	.....
Averages .....	.....	.....	.....	.....	230	.....	..	..	\$0 45	\$0 45	.....	.....	.....	0 789

* Miners paid gross weight.

† Machine miners.

Greene County, 1893—Concluded.

Carter Coal Co	10	14	2	....	234	.....	..	..	\$1 00	\$1 00	3,600	3,600	.....	\$1 37
Brickey & Co.	5	8	1	....	210	.....	..	..	1 00	1 00	1,850	1,850	.....	1 37
Thomas Griffith...	3	6	1	....	215	.....	..	..	1 00	1 00	1,100	1,100	.....	1 37
Edward Griffith...	3	6	1	....	220	.....	..	..	1 00	1 00	1,020	1,020	.....	1 37
Whitehall C. & T. C	12	15	1	....	234	.....	..	..	1 00	1 00	3,425	3,425	.....	1 37
Totals	33	49	6	....	....	....	..	..	.....	.....	10,995	10,995	.....	.....
Averages ....	.....	.....	.....	.....	223	.....	..	..	\$1 00	\$1 00	.....	.....	.....	\$1 37

Jersey County—Fourth District—1893.

Name of firm, company or person operating mine.	Town or postoffice nearest the mine.	CHARACTER OF PLANT.										Estimated number of acres worked out during the year.
		Drift, Slope, Shaft.	Power, — Steam, Horse or Hand.	Shipping or Local mine.	Hand or Machine mine.	Long-wall or Pillar-and-Room.	Old, New or Abandoned mine.	Paid weekly semi-monthly or monthly.	Depth below the surface, —feet.	Thickness of seam, feet and inches.	Geological number of seam.	
Michael Burns.....	Brighton ...	D.	H.	Lo.	H.	P. R.	O.	W'y	40	2.6	1	.40
Paul Fisher	"	Sh.	Hr.	"	"	"	N.	"	60	2.6	1	.50
M. Curren.....	"	"	H.	"	"	"	O.	"	40	2.6	1	.30
John Motlev.....	Delhi	D.	"	"	"	"	"	"	60	2.6	1	.40
Totals (4 mines).....												1.60
Averages												

Macon County—Fourth District—1893.

Decatur Coal Co. No. 1...	Decatur	Sh.	St.	Sh.	H.	L. W.	O.	W'y	612	4.4	5	4
No. 2...	"	"	"	"	"	"	"	"	614	4.4	5	3.85
Niantic Coal Co.....	Niantic.....	"	"	"	"	P. R.	"	"	370	5.6	5	2.74
Totals (3 mines).....												10.59
Averages.....												

Macoupin County—Fourth District—1893.

C. C. C., St. L., Mo., No. 6	Staunton ...	Sh.	St.	Sh.	M.	P. R.	O.	*	322	7	6	46
No. 7	"	"	"	"	"	"	"	*	360	7.6	6	33
No. 8	Mt. Olive ..	"	"	"	"	"	"	*	402	8	6	41
No. 10	"	"	"	"	"	"	"	*	420	8	6	38
Gillespie	Gillespie ..	"	"	"	"	"	"	*	345	7.6	5	24
St. Bernard	Clyde	"	"	"	"	"	"	*	390	7.6	5	18
Mt. Olive Coal Co.....	Mt. Olive ..	"	"	"	"	"	"	S. M.	435	8	6	40
Bunker Hill Coal Co.....	Bunker Hill	"	"	"	H.	"	"	"	250	5.6	5	1
Carlinville Coal Co.....	Carlinville..	"	"	"	"	"	"	"	290	6.6	5	11.28
Carbon Coal Co.....	Nilwood	"	"	"	"	"	"	"	325	6.6	5	9.13
Girard Coal Co.....	Girard	"	"	"	M.	"	"	M'y	357	7	5	25.27
Viriden Coal Co.....	Viriden	"	"	"	H.	"	"	S. M.	320	7	5	10
Chicago-Viriden Coal Co.	"	"	"	"	"	"	N.	"	322	7	5	.25
John Randolph	Chesterfield	"	Hr.	Lo.	"	"	"	W'y	56	6	5	.20
Chas. Trill	"	"	"	"	"	"	O.	"	54	6	5	.30
B. F. Lucking.....	Fosterburg.	"	"	"	"	"	"	"	62	5	5	.60
Totals (16 mines).....												298.03
Averages.....												

* No return made.

Jersey County, 1893—Concluded.

Name of firm, company or person operating mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.												Av. value of lump coal per ton at the mine.	
	Miners em- ployed.		em- ployed.	Boys employed under ground.	Running days in the year.	Kegs of powder used during year.	Casual- ties.		Prices paid per ton for hand mining		Tons of coal mined.			
	Av. during the year.	High'st dur- ing year.					Killed.	Injured.	Sum- mer.	Win- ter.	Total.	Lump coal.	Oth'r grades.	
Michael Burns....	3	5	1	...	297	...	...	...	\$1 00	\$1 00	1,522	1,522	.....	\$1 50
Paul Fisher.....	4	6	1	...	302	...	...	...	1 00	1 00	1,820	1,820	.....	1 50
M. Curren.....	2	3	...	...	241	...	...	...	1 00	1 00	1,142	1,142	.....	1 50
John Motley.....	3	5	...	...	272	...	...	...	1 00	1 00	1,420	1,420	.....	1 50
Totals	12	19	2	...	...	...	...	...	.....	.....	5,904	5,904	.....	.....
Averages ...	...	...	...	...	278	...	...	...	\$1 00	\$1 00	.....	.....	.....	\$1 50

Macon County, 1893.—Concluded.

Decatur C. C. No. 1	125	150	33	3	307	.....	.. ..	*\$0 54	*\$0 54	115,000	100,000	15,000	\$1 23
No. 2	115	130	32	2	300	.....	.. ..	*56	*56	94,875	81,908	12,947	1 23
Niantic Coal Co....	54	89	22	2	274	3,215	.. ..	*45	*45	70,378	55,594	14,844	97
Totals.....	294	369	87	7	.....	3,215	.. ..	.....	.....	280,233	237,442	42,791	.....
Averages ....	.....	.....	.....	.....	294	.....	.....	\$0 48	\$0 48	.....	.....	.....	\$1 17

* Miners paid for gross weight.

Macoupin County, 1893—Concluded.

Con. Coal Co. No. 6	....	....	256	5	211	2,486	2	9	†	†	302,449	219,458	82,991	\$0 80
No. 7	....	....	167	4	265	1,990	1	4	†	†	215,816	142,707	73,109	80
No. 8	....	....	206	5	255	2,032	..	2	†	†	304,939	218,301	86,638	75
No. 10	....	....	197	4	247	1,912	..	1	†	†	290,509	210,169	80,340	75
Gillespie	....	....	134	3	208	1,148	..	1	†	†	121,639	93,173	28,466	90
St. Bernard	....	....	106	2	191	880	..	..	†	†	93,135	70,699	22,436	90
Mt. Olive Coal Co.	....	....	170	4	292	1,593	..	..	†	†	227,973	173,420	54,553	65
Bunker Hill C ¹ Co.	10	15	4	....	263	75	..	..	\$0 75	\$0 75	6,089	4,628	1,461	1 62
Carlville Coal Co.	65	85	16	....	268	2,257	..	4	*40	*40	90,302	67,727	22,575	70
Carbon Coal Co....	60	97	19	....	289	1,875	..	1	*44	*44	64,165	62,600	1,565	75
Girard Coal Co....	....	....	149	....	282	1,721	..	7	†	†	189,591	176,290	13,301	75
Virden Coal Co....	90	100	31	6	275	2,500	..	1	*40	*40	73,258	62,258	11,000	80
Chi. Vird'n Coal Co.	13	14	8	....	† 41	81	..	..	.....	.....	1,769	1,729	40	75
John Randolph....	2	3	1	....	246	.....	..	..	75	75	1,205	1,205	.....	1 50
Chas. Trill.....	2	5	1	....	222	.....	..	..	75	75	2,110	2,110	.....	1 50
B. F. Lucking.....	4	6	1	....	272	.....	..	..	75	75	3,120	3,120	.....	1 50
Totals.....	246	325	1466	33	.....	20,550	3	30	.....	.....	1,988,069	1,509,594	478,475	.....
Averages ....	.....	.....	.....	.....	250.4	.....	.....	.....	\$0 75	\$0 75	.....	.....	.....	\$0 76

† Coal cut by machines, miners paid by the day.

* Miners paid for gross weight.

† Not included in average number of days.

Madison County—Fourth District—1893.

[illegible]

* Not reported.

Montgomery County—Fourth District—1893.

[illegible]

Morgan County—Fourth District—1893.

[illegible]

Madison County, 1893—Concluded.

Name of firm, com- pany or person op- erating mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.														Av. value of lump coal per ton at the mine.
	Miners em- ployed.		All other em- ployes.	Boys employed under ground.	Running days in the year.	Kegs of powder used during year.	Casual- ties.		Prices paid per ton for hand mining		Tons of coal mined.				
	Av. during the year.	Highest dur- ing year.					Killed.	Injured.	Sum- mer.	Win- ter.	Total.	Lump coal.	Oth'r gr- ades.		
Con. C. C., St. L., Mo															
Abbey No. 3.....	88	88	42	4	265	1,597	..	..	*	*	184,729	143,151	41,578	\$0 70
Heintz Bluff.....	97	97	44	3	256	1,493	..	2	*	*	184,077	139,189	44,888	70	
Brookside.....	32	40	15	1	207	522	..	..	\$0 50	\$0 50	38,873	27,841	11,032	1 00
Troy.....	68	68	26	2	222	586	..	..	*	*	73,822	48,168	25,654	1 00
Worden No. 12....	18	20	2	...	198	292	..	..	40	40	18,257	16,598	1,659	70
McDonald.....	2	2	1	...	38	...	..	..	40	40	419	381	38	70
Mad. C. C., St. L., Mo															
No. 1.....	.....	.....	110	.....	306	2,100	..	4	*	*	92,299	74,344	17,955	75
No. 2.....	.....	.....	202	.....	298	4,000	1	4	*	*	184,032	161,867	22,165	75
No. 3.....	.....	.....	68	.....	200	700	1	1	*	*	55,069	51,778	3,291	75
Wonderly Coal Co.	25	30	10	2	207	400	..	..	150	152	13,236	12,436	800	80
Lumaghis Colliery	67	80	10	2	237	2,402	..	..	†	†	85,090	60,544	24,546	75
Nathan Sydel.....	5	6	1	.....	240	.....	..	..	1 00	1 00	2,342	2,342	.....	1 50
J. Pierce & Co.....	4	5	1	.....	222	.....	..	..	1 00	1 00	1,818	1,818	.....	1 50
Henry Millar.....	2	3	1	.....	262	.....	..	..	1 00	1 00	821	821	.....	1 50
Peter Meyer.....	2	2	1	.....	185	.....	..	..	1 00	1 00	243	243	.....	1 50
Molloy & Black....	2	2	1	.....	90	.....	..	..	1 00	1 00	110	110	.....	1 50
Wm. Chancelworth	6	6	1	.....	310	.....	..	..	75	75	6,120	6,120	.....	1 50
John Spence.....	4	6	1	.....	292	.....	..	..	75	75	5,212	5,212	.....	1 50
Herman Kable.....	3	4	1	.....	285	.....	..	..	75	75	2,680	2,680	.....	1 50
Wm. Richardson...	3	4	1	.....	265	.....	..	..	75	75	2,110	2,110	.....	1 50
Green's Mine.....	2	2	1	.....	145	.....	..	..	75	75	320	320	.....	1 50
Wm. Owens.....	1	2	1	.....	126	.....	..	..	75	75	215	215	.....	1 50
Totals	431	467	541	14	.....	14092	2	11	.....	.....	951,894	758,288	193506	.....
Averages.....	.....	.....	.....	.....	236	.....	.....	.....	\$ 57.68	\$ 57.68	.....	.....	.....	0.778

* Machine mines, miners paid by the day.

† Miners paid for gross weight.

‡ Miners paid by the day.

Montgomery County—1893—Concluded.

Litchfield Coal Co.	40	50	10	...	286	.....	..	..	*\$0 75	*\$0 75	* 20,320	14,320	6,000	\$1 00
Hillsboro Coal Co.	100	120	22	...	304	2,166	..	1	* 55	* 55	*115,792	73,600	42,192	80
Coffeen Coal Co...	50	62	12	2	185	571	..	..	* 45	* 45	* 39,600	36,000	3,600	75
Totals.....	190	232	44	2	.....	2,737	..	1	.....	.....	175,712	123,920	51,792	.....
Averages.....	.....	.....	.....	.....	258	.....	.....	.....	.....	.....	.....	.....	.....	0.809

* Miners paid for gross weight.

Morgan County—1893—Concluded.

F. Wagstaffe.....	2	5	1	...	210	.....	..	..	\$0 82	\$0 82	1,210	1,210	.....	\$1 75
W. T. Fisher.....	2	4	1	...	185	.....	..	..	82	82	812	812	.....	1 75
Harry Bosse.....	2	2	1	...	90	.....	..	..	82	82	120	120	.....	1 75
Totals.....	6	11	3	...	.....	.....	.....	.....	.....	.....	2,142	2,142	.....	.....
Averages.....	.....	.....	.....	.....	162	.....	.....	.....	\$0 82	\$0 82	.....	.....	.....	\$1 75

Sangamon County—Fourth District—1893.

[illegible]

Scott County—Fourth District—1893.

[illegible]

Shelby County—Fourth District—1893.

[illegible]

Sangamon County—1893—Concluded.

Name of firm, com- pany or person op- erating mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.															Av. value of lump coal per ton at the mine.
	Miners em- ployed.		All other em- ploys.	Boys employed under ground.	Running days in the year.	Kegs of powder used during year.	Casual- ties.		Prices paid per ton for hand mining.		Tons of coal mined.					
	A'v. during the year.	Highest dur- ing year.					Killed.	Injured.	Sum- mer.	Win- ter.	Total.	Lump coal.	Oth'r grades.			
Auburn Coal Co...	30	40	7	3	225	1,350	...	...	†	†	31,172	30,172	1,000	\$0 70
Lick Creek Coal Co	25	30	6	...	262	600	...	...	†	†	25,310	23,120	2,190	75
Black D. C. & T. Co	75	90	12	12	285	1,120	...	...	†	†	84,785	63,127	21,658	90
Spfld. Junc. C. Co	80	100	21	1	274	1,875	...	1	1	50	56	65,558	52,448	13,110	85	
Woodside Coal Co.	90	150	30	12	250	3,076	1	1	40	45	102,100	80,000	22,100	87		
West End Colliery.	50	75	16	2	180	2,536	...	...	40	45	58,832	48,948	9,884	1 03
Capitol Co-op. No.1	30	30	15	1	270	1,480	...	...	45	50	36,698	33,288	3,410	81
No.2	55	55	25	2	270	3,120	...	...	45	50	83,997	72,817	11,180	1 05
Sangamon Coal Co	89	147	26	3	268	4,110	...	...	40	45	104,566	82,336	22,230	81
Starne's Coal Co...	65	100	20	...	257	3,340	...	3	40	45	86,000	65,000	21,000	85		
Spfld. Co-op. C. C.	40	80	25	2	275	2,500	...	...	40	45	60,000	52,613	7,387	90
W. & Spfld. C. C.	97	97	2	2	274	2,864	...	...	40	45	89,079	86,826	2,253	90
Spfld. C. & T. Co.	50	90	24	2	252	2,857	...	2	40	45	71,095	57,143	13,952	90		
Clear Lake Coal Co	30	45	16	...	210	2,300	1	...	45	45	50,883	42,883	8,000	82		
Illinois Fuel Co....	110	140	25	6	282	3,855	...	...	40	45	112,234	100,234	12,000	90
Barclay Coal Co....	90	110	24	4	250	3,311	...	...	40	45	91,000	75,000	16,000	85
Riverton C. & M. Co	103	130	30	5	282	3,944	...	...	40	45	116,392	85,572	30,820	91
Wabash Coal Co....	35	50	10	...	260	2,508	...	1	40	45	65,061	54,180	10,881	85		
Spfld. & P. P. C. Co	15	30	7	2	230	510	...	...	55	55	10,682	8,545	2,137	95
Cantrall Co op. C.C	55	65	16	...	210	2,345	...	...	40	45	63,050	54,920	8,130	83
Williamsville C. Co	6	8	8	...	75	65	...	...	40	45	1,852	1,652	200	85
Totals	1,220	1,662	305	49	...	52,666	2	9	...	...	1410,346	1170,854	239,492	...
Averages.....	...	...	...	...	255	...	...	...	\$ 49.78	\$ 55.66	...	...	...	\$0 88

* Miners paid for gross weight; average price—summer, \$0.41.2; winter, \$0.45.5.

† Machine mine.

‡ Miners paid by the day.

§ Average for lump tons.

Scott County, 1893.—Concluded.

W. H. Bates & Co.	40	40	8	..	275	712	..	..	\$1 12½	\$1 12½	21,500	20,900	600	\$1 50
Isaac Carlton.....	2	2	..	..	150	..	..	..	1 12½	1 12½	125	125	..	1 50
Jas. H. Johnson...	2	2	..	..	310	..	..	..	1 12½	1 12½	320	320	..	1 50
McGuire Bros.....	4	6	1	..	220	..	..	..	1 12½	1 12½	812	812	..	1 50
Totals	48	50	9	..	..	712	..	..	..	..	22,757	22,157	600	..
Averages .....	..	..	..	..	239	..	..	..	\$1 12½	\$1 12½	..	..	..	\$1 50

Shelby County, 1893—Concluded.

Mawaequa C. Co...	20	30	15	..	60	250	..	..	*	*	5,000	3,800	1,200	\$0 90
J. Richardson	11	14	1	..	261	..	..	..	\$1 25	\$1 25	4,140	4,140	..	1 75
J. Stretch.....	3	3	1	..	162	..	..	..	1 25	1 25	1,344	1,344	..	1 75
B. Christie.....	2	2	1	..	184	..	..	..	1 25	1 25	1,102	1,102	..	1 75
T. Hornbach	2	2	1	..	147	..	..	..	1 25	1 25	852	852	..	1 75
M. Brophy.....	2	3	1	..	154	..	..	..	1 25	1 25	1,022	1,022	..	1 75
Totals	40	54	20	..	..	250	..	..	..	..	13,460	12,260	1,200	..
Averages .....	..	..	..	..	182	..	..	..	\$1 25	\$1 25	..	..	..	\$1 49

* Miners paid for gross weight.

Recapitulation of Coal Mines by Counties—

COUNTIES.	MINES.						MINERS.								
	Number of mines.	Shipping mines.	Mines in local trade.	New mines.....	Abandoned mines.	Estimated number of acres worked out during year.	No. of miners and other employes.				Average number of running days.	Number of kegs of powder used.	Cas-ualties.		
							Average No. of miners.	Highest No. of miners.	No. of other employes.	No. boys un-der ground.			Killed.	Widows.	Children.	Injured.
Bond	1	1	..	..	1	11.13	50	80	24	4	236	1,851	..	..	..
Calhoun	1	..	1	..	..	1.50	12	14	2	..	270	210	..	..	..
Christian	6	6	..	..	..	101.50	637	806	298	32	230	5,340	3	1	2 16
Greene	5	..	5	..	7	3.05	33	49	6	..	223	..	..	..	..
Jersey	4	..	4	..	..	1.60	12	19	2	..	278	..	..	..	..
Macon	3	3	..	..	..	10.59	294	369	87	7	294	3,215	..	..	..
Macoupin	16	13	3	2	..	298.03	246	325	1,466	33	250.4	20,550	3	2	5 30
Madison	22	10	12	..	..	143.44	431	467	541	14	236	14,092	2	..	11
Montgomery	3	3	..	..	..	20.70	190	232	44	2	258	2,737	..	..	1
Morgan	3	..	3	..	..	1.35	6	11	3	..	162	..	..	..	..
Sangamon	21	21	..	1	..	192.87	1,220	1,662	365	49	255	52,666	2	..	9
Scott	4	1	3	..	3	6.93	48	50	9	..	239	712	..	..	..
Shelby	6	1	5	..	..	4.81	40	54	20	..	182	250	..	..	..
Cumberland, Effingham, Jasper, Pike and Richland.....	9	..	9	3	..	1.00	12	14	2	..	..	..	..	..	..
Totals	104	59	45	6	11	798.50	3,231	4,152	2,869	141	.....	101,623	10	3	7 67
Averages .....	..	..	..	..	..	..	..	..	..	..	236	..	..	..	..

Whole number of openings reported in 1892, 109.

Number of new mines or places opened during the year, 6.

Number of mines exhausted or abandoned during the year, 11.

Whole number of openings reported for 1893, 104.

Fourth Inspection District—1893.

COUNTIES.	PRICES AND PRODUCTS.						Average value of coal per ton at the mine.		Aggregate value of total products.
	Average prices for hand-mining.			Tons of coal mined.			Lump.	Other grades	
	Summer.	Winter.	Average for the year.	Total tons.	Tons of lump.	Tons of other grades.			
Bond	*	*	*	78,600	56,120	22,480	\$0 82	\$0 355	\$54,000
Calhoun	\$1 00	\$1 00	\$1 00	4,584	4,584	.....	2 00	.....	9,168
Christian	45	45	45	839,650	593,602	246,048	789	363	557,710
Greene	1 00	1 00	1 00	10,995	10,995	.....	1 37	.....	15,063
Jersey	1 00	1 00	1 00	5,904	5,904	.....	1 50	.....	8,856
Macon	†	†	†	280,233	237,442	42,791	1 169	474	297,899
Macoupin	75	75	75	1,988,069	1,509,594	478,475	77	30	1,302,845
Madison	57.68	57.68	57.68	951,894	758,288	193,606	778	308	649,544
Montgomery	†	†	†	175,712	123,920	51,792	809	27	114,181
Morgan	82	82	82	2,142	2,142	.....	1 73	.....	3,749
Sangamon	49.7	55.66	53.67	1,410,346	1,170,854	239,492	881	266	1,094,805
Scott	1 12½	1 12½	1 12½	22,757	22,157	600	1 50	.....	33,236
Shelby	1 25	1 25	1 25	13,460	12,260	1,200	1 487	40	18,826
Cumberland, Effingham, Jasper, Pike and Richland .....	.....	.....	.....	520	520	.....	2 00	.....	1,040
Totals .....	.....	.....	.....	5,784,866	4,508,382	1,276,484	.....	.....	\$4,160,922
Averages	\$0 55	\$0 55.91	\$0 55.62	.....	.....	.....	\$0 836	\$0 36	.....

* Machine mines, miners paid by the day.

† Miners paid for gross weight.

FIFTH INSPECTION DISTRICT---1893.

MR. GEORGE A. SCHILLING,

Secretary of the State Bureau of Labor Statistics, Springfield, Ill.:

SIR:—In conformity with section twelve of the mining law of the State, defining the duties of State Inspectors of Mines, I herewith submit the tenth annual report for the Fifth Inspection District of the State, for the year ending July 1, 1893.

The usual tabular statements for each county in the district are given, of which the following is a brief summary:

Number of mines reported	153
Number of new mines opened during the year.....	6
Number of mines abandoned	17
Number of shipping mines	102
Number of mines in local trade.....	51
Average number of miners employed	4,385
Highest number employed during the year.....	5,419
Number of boys employed in the mines.....	135
Number of other employes in and about the mines.....	1,361
Total number of employes.....	6,780
Number of kegs of powder used.....	121,187
Number of tons of coal mined by hand, including all grades.....	3,714,906
Number of tons mined by machines	1,657,009
Total tons of all grades mined in the district.....	5,371,915
Aggregate value of total product.....	\$3,776,423
Average value of lump coal at the mines.....	\$0 80.25
Average value of other grades of coal	\$0 37.67
Average price for hand mining in summer, lump coal.....	\$0 40.2
Average price for hand mining in winter, lump coal.....	\$0 44.7
Number of fatal accidents.....	25
Number of non-fatal accidents	74
Number of tons of coal produced for each fatal accident	214,877
Number of tons of coal produced for each non-fatal accident.....	72,593
Number of employes for each fatal accident	271
Number of employes for each non-fatal accident	73
Number of mining machines in use: Harrison, 62; Yock, 14; Choteau, 12; Jeffrey, 5; Ingerson, 6; Sargeant, 5; Stanley Header 2; total.....	106

In the following table is given the quantity of lump coal mined in the counties named, compared with the year 1892:

Counties.	1892.	1893.	Increase.	Decrease.
Clinton	156,376	174,994	18,618	
Gallatin	13,782	14,972	1,190	
Jackson	674,161	674,943	782	
Marion	306,019	352,793	46,774	
Perry	362,926	620,502	257,576	
Randolph	160,532	161,565	1,033	
Saline	41,992	24,929		17,063
St. Clair	1,519,472	1,778,787	259,315	
Washington	54,183	63,500	9,317	
Williamson	210,014	254,726	44,712	
Totals	3,499,457	4,121,711	639,317	17,063

Showing a net gain of 622,254 tons.

Strikes.—August 19, 1892, the miners at three of the mines at Percy, Randolph county, struck for an increase of five (5) cents per ton; after being out two weeks they returned to work at the price paid when they went out. The miners at Centralia came out on a strike December 14, 1892, for 35 cents per ton, gross weight; they continued out until March 1, 1893, when they all went back to work at 56½ cents per ton, the coal to go over a screen 1¼ inch mesh.

Fires.—August 7, 1892, the engine house, boiler house, tower and tippie houses of the T. & H. Mining Company, at Wilderman Station, on the Cairo Short Line Railroad, was destroyed by fire; all are being rebuilt at the present time. January 15, 1893, the store-house and office of the Sun Coal and Coke Company, at Sunfield, Perry county, burned with the contents; loss about \$3,000. March 13, 1893, Davenport & Co.'s engine house, tower and tippie houses, at Harrisburg, Saline county, were destroyed by fire; it was supposed that the fire originated from a passing engine and up to the present time the works have not been rebuilt. This was the largest and most productive mine in the county, and its suspending operations accounts for the decrease in the tonnage of the county for the year, as compared with that of 1892. May 6, 1893, the engine house burned at the Ruby Mine owned by the Consumers' Coal Company, at Caseyville, in St. Clair county. It has since been rebuilt. June 1, 1893, the boiler house and compressor house of the Consolidated Coal Co., St. Louis, at its Gartside No. 4 Mine, Belleville, was destroyed by fire; both have since been rebuilt.

Improvements.—The Carterville Coal Company, Carterville, Williamson county, has erected a new fan, 11 feet 8 inches in diameter, of the Brazil pattern, and has put up a revolving screen. The St. Louis Ore & Steel Co., Murphysboro, Jackson county, is sinking a new shaft; it is intended to make this a model mine. The Consolidated Coal Co., St. Louis, has sunk a new shaft at Trenton, Clinton county, and equipped it in the most modern style. The T. & H. Mining Co., at Wilderman Station, on the Cairo Short Line Railroad, has erected a new fan. Charles Hartman, at Belleville, has retimbered his hoisting shaft and put up a new fan. The Oak Hill Coal Co., Belleville, has sunk an air and escape shaft. The Humboldt Coal Co., Belleville, has retimbered its hoisting and escape shaft. The Louisville & Nashville Coal Co., Belleville, has finished its escape shaft. The Maule Coal Company, Belleville, has put in a system

of tail-rope haulage. The Crown Coal Co., Belleville, has built a new tower and tippie and made other improvements at its Harmony mine. John Brosius, Belleville, has put up a new fan. Pittinger & Davis, Centralia, are sinking a new air and escape shaft. T. L. Stockton and the Barber Bros. have retimbered their shafts at Tamaroa, Perry county. The St. Louis & Big Muddy Coal Co., Sharterville, Williamson county, has put up a 20-foot fan. The Horn Colliery Co., DuQuoin, Perry county, has put up a 15-foot fan. The Valley & Gulf Coal Co., Sparta, Randolph county, has put up a 19-foot fan, which comes nearer meeting the requirements of a good ventilating fan than any other in the district.

It will be seen that a great many improvements have been made in and about the mines in the district during the year, all of which are substantial and satisfactory.

Accidents.—July 12, 1892, James Davidson, miner, a single man aged 35 years, in the employ of the Excelsior Coal Co. at DuQuoin, was instantly killed by a piece of soap-stone weighing about two tons falling on him; he thought it would stand until he could drill a hole; he had only drilled about six inches when it fell, with result as stated.

August 6, 1892, William Saunders, a timberer, single man, aged 30 years, in the employ of the Perry Coal Co. at St. Johns, was pulling down some loose slate with a crow-bar on the main entry; he let the bar rest on the bottom and against his abdomen; the slate fell and rolled over against the bar with such force as to cause the end to burst his bowels, from which he died in a few hours.

August 16, 1892, W. S. Conkling, married, aged 40 years, formerly a miner, sold a mule to the Lebanon Mining and Machine Association, and went down in the mine to assist in starting the mule to work; when this was done he started to go out; just as he reached the bottom of the shaft, the cage had rung the empty cage away. Conkling attempted to get on the cage after it had started, but was caught between the cage and the side of the shaft and killed instantly. He left a widow and five children in poor circumstances.

September 12, 1892, George Phillips, colored, single man aged 30 years, a miner, in the employ of the Jupiter Mining Co., DuQuoin, was killed by fall of slate in his room: he was notified of the danger and promised to timber the place but neglected to do so.

September 20, 1892, Jacob Slusher, miner, married, 45 years of age, in the employ of the Highland Coal Co., Belleville, was instantly killed by a fall of top-coal and slate in his room; from the appearance of the room after the accident, it showed great carelessness on the part of the deceased. He left a widow and three small children in poor circumstances.

November 4, 1892, William Guyse, miner, 30 years of age, single, in the employ of the Consolidated Coal Co. of St. Louis, at the Knecht mine at Birkner, was loading coal in a room which had been blasted; there was a large piece of coal which had not rolled over, and while he was working just in front of this piece it unexpectedly toppled over on him, killing him instantly. He was an Englishman and had been in this country but a short time.

November 12, 1892, Newton Jacobs, driver, married, aged 28 years, in the employ of the Excelsior Coal Co. at DuQuoin, during a temporary stoppage of work, was told by the manager to clean up the road wherever needed; finding some slate on the entry roads he proceeded to shovel it away; he failed to examine for loose slate over head, and had worked but a few minutes when a large piece of slate fell, injuring him so severely that he died in a few minutes. He left a widow and two children.

November 12, 1892, Henry Daniels, driver, single, 22 years of age, in the employ of the Odin Coal Co., Odin, was found lying on the track behind a trip of loaded mine-cars: the mule was standing hitched to the car; it is supposed he was squeezed between the top of the cars and the cross-bars; he was unconscious when found and remained so until next day, when he died.

November 28, 1892, Peter Handforth, miner, married, aged 53 years, in the employ of the Consumers' Coal Co. at their Ruby mine, near Caseyville, was working off loose coal in his room when it suddenly fell, injuring him so badly that he died about two weeks afterwards. He left a widow and two children.

December 2, 1892, Samuel Wiles, driver and blaster, married, aged 28 years, employed by the Oakland Coal Co., Belleville, had fired a blast, but the squib failed to ignite the powder; he tried it several times, but each time it was a failure; he concluded to drill the hole out, thinking the powder was wet; his partner was near him and two machine men about eight feet away; Wiles commenced drilling and had drilled into the powder when the drill struck a sulphur ball in the hole, discharging the powder, burning him so severely that he died afterwards; his partner was also severely burned. It was remarkably strange that all four of the men were not killed, as the coal about twenty tons was blown down and scattered in all directions; deceased left a widow and two children.

December 17, 1892, William Miller, miner, single, 35 years of age, in the employ of Charles Becker, Freeburg, was instantly killed by falling slate. The room in which he was working had been driven into the face of another room, leaving a space of about forty feet square, which had no props. He was loading the last car which he intended to load in that place, when a piece of slate about forty feet long, twenty wide and eighteen inches thick, fell on him, resulting as stated.

December 21, 1892, Elmer Roseberry, laborer, and Alfred Simpson, miner, both single men, employed by the Consolidated Coal Company, in its Mentor mine, at Ridge Prairie, were engaged in walling up a gob-fire in the mine and were suffocated by gasses given off by the fire. The mine manager sent them in to put up the wall; there was no means of escape, only by the way where they entered the old works in which the fire was burning. Not being acquainted with the action of gasses, they entered a death-trap and stayed until taken out dead. The mine manager had been warned of this danger and had been told how to prevent such accidents; but he failed to do it, and the result was the loss of two lives. Roseberry was 28 years of age and Simpson 24.

December 27, 1892, Jacob Field, miner, aged 26 years, single, in the employ of the Odin Coal Co., Odin, was instantly killed by falling coal in his room; he had a standing shot and was working it off when it suddenly rolled over on him with the above result.

December 31, 1892, Lemmon Rainey, blaster, married, aged 28, employed by G. W. Brown, at Pinckneyville, lighted the squib of a shot and got out of the way, where he waited until he thought it had time to go off, when he started to return to see what was the matter. The room was driven about twenty feet from the entry; just as he got opposite the room the shot exploded, and the coal flew out into the entry, some of it striking him, fracturing his skull; he lived nine hours after the accident.

January 6, 1893, William Bassie, miner, aged 40 years, married, employed by the Gartside Coal Company, at Murphysboro, was instantly killed by falling top-coal at the face of his room, which he failed to prop up sufficiently for his safety.

January 16, 1893, Griffin Watts, miner, married, aged 44 years, employed by Kuhn & Schwind, at DuBois, was instantly killed by a piece of rock falling on him at the face of his room. The room had a rock top, and a piece of the same, about sixteen inches thick and twenty-five feet long, became loose; he put two props under the back end; the end next to the face of the room was resting on a loose shot he had fired: he mined the coal off, when the rock fell with the above result. He left a widow and four children.

January 17, 1893, William Coleman, top-man, married, aged 27 years, in the employ of the Consolidated Coal Co., at Trenton. On the night of this day, the deceased was told to call down to some men below to send away the empty cage, so that the machinist could go down to work on the pump; he laid down on the ground, put his head over the shaft, on the side where the cage was up; just at this time the engineer received a signal from below to hoist; he started the engine, when the cage came down and beheaded Coleman. His head fell to the bottom of the shaft, 333 feet. He left a widow and three children.

February 12, 1893, Patrick Level, miner, married, aged 54 years, employed by the Bryden Coal Co., at Sato, was instantly killed by a loose shot, which he was mining, falling over on him. He left a widow and six children,

February 17, 1893, Obediah Picks, colored, miner, single, aged 22 years, was instantly killed by falling slate in the face of his room in the mine of the Horn Colliery Co. at DuQuoin. He was about starting to widen out his room; the roof was rotten soap-stone, and he failed to put up props; a large piece of stone fell on him with the above result.

February 20, 1893, Jesse Holland, colored, miner, married, age 34, years, was seriously hurt in his room in the Jupiter Coal Co.'s mine at DuQuoin, by falling slate; he knew the slate in the roof of his room was loose but wanted to load some coal before setting any props; the slate fell before he finished loading the coal; he lived two days after he was hurt. He left a widow and one child.

March 6, 1893, Peter Smith, blaster, single, aged 20 years, in the employ of the Consolidated Coal Co. at the Rose Hill mine, Belleville. Smith was in the act of putting up some props, which was a part of his duty, when a large piece of slate fell on him, killing him instantly.

June 5, 1893, John Jones, miner, single man, 21 years of age, in the employ of the Consumers' Coal Co. at its Ruby mine near Caseyville, was so severely burned that he died eight days after the accident; he had fired a shot which failed to go off, and started to drill the shot out; when the bit of the drill struck the powder it ignited and exploded, burning him with the above result.

June 26, 1893, Peter Hornbush, miner, married, aged 43 years, in the employ of the Lenzburg Coal Co. at Lenzburg, was instantly killed by falling slate. Hornbush knew the slate was loose, but wanted to load another car before timbering; a piece of slate, about two tons weight, fell on him just as he was about to finish his car, killing him instantly. He left a widow and seven children.

June 29, 1893, Frank Howe, miner, aged 40, married, in the employ of the Bryden Coal Co., Sato, was instantly killed by a blast in his room; he had fired a shot and waited until he thought it had time to explode, then went back to see what was the matter; just as he got back to the shot it went off, with result as stated. He left a widow and four children.

The following are tables of the fatal and non-fatal accidents:

Fatal Casualties—Fifth District, 1893.

Date.	Name.	Age.	Occupation.	Residence.	Married.	Widow.	Children.	Single.	Dependents.	Cause of Accident.
1892.										
July 12	James Davidson	35	Miner	DuQuoin	..	..	1	..	..	Falling slate
Aug. 6	William Saunders	30	Timberman	St. Johns	..	..	1	..	..	Falling slate
" 16	W. S. Conkling	40	Miner	Lebanon	1	1	5	..	6	Ascending cage
Sept. 12	George Phillips	30	Miner	DuQuoin	..	..	1	..	..	Falling slate
" 20	Jacob Slusher	45	Miner	Belleville	1	1	3	..	4	Falling coal
Nov. 4	William Guyse	30	Miner	Belleville	..	..	1	..	..	Falling coal
" 12	Henry Daniels	22	Driver	Odin	..	..	1	..	..	Pit-car & top timbers
" 12	Newton Jacobs	28	Driver	DuQuoin	1	1	2	..	3	Falling slate
" 28	Peter Handforth	53	Miner	Caseyville	1	1	2	..	3	Falling coal
Dec. 2	Samuel Wiles	23	Mine	Belleville	1	1	2	..	3	Premature blast
" 17	William Miller	35	Miner	Freeburg	..	..	1	..	..	Falling slate
" 21	Elmer Roseberry	28	Laborer	R'ge Prairie	..	..	1	..	..	Gas from gob-fire
" 21	Alfred Simpson	24	Miner	R'ge Prairie	..	..	1	..	..	Gas from gob-fire
" 27	Jacob Field	26	Miner	Odin	..	..	1	..	..	Falling coal
" 31	Lemmon Rainey	28	Miner	Pinck'ville	1	1	1	..	2	Flying coal
1893.										
Jan. 6	William Bassie	40	Miner	M'rphysbro	1	1	2	..	3	Falling coal
" 16	Griffin Watts	44	Miner	DuBois	1	1	4	..	5	Falling rock
" 17	William Coleman	27	Miner	Trenton	1	1	3	..	4	Descending cage
Feb. 12	Patrick Level	54	Miner	Sato	1	1	6	..	7	Falling coal
" 17	Obediah Picks, col.	22	Miner	DuQuoin	..	..	1	..	..	Falling slate
" 20	Jesse Holland, col.	34	Miner	DuQuoin	1	1	1	..	2	Falling slate
Mar. 6	Peter Smith	20	Miner	Belleville	..	..	1	..	..	Falling slate
June 5	John Jones	21	Miner	Caseyville	..	..	1	..	..	Premature blast
" 26	Peter Hornbush	43	Miner	Lenzburg	1	1	7	..	8	Falling slate
" 29	Frank Howe	40	Miner	Sato	1	1	4	..	5	Premature blast
Totals					13	13	42	12	55	

RECAPITULATION OF FATAL CASUALTIES—FIFTH DISTRICT—1893.

Residence.	No.	Occupation.	No.	Casualty.	No.	Colliery.	No.
Belleville	4	Drivers.....	2	Cage ascending..	1	Becker, Charles....	1
Caseyville	2	Laborer.....	1	Cage descending..	1	Brown, G. W.....	1
DuBois	1	Miners.....	21	Falling coal.....	6	Bryden Coal Co....	2
DuQuoin.....	5	Timberman..	1	Falling rock.....	10	Consolid'd Coal Co.	5
Freeburg.....	1			Flying coal.....	1	Consum'r's Coal Co.	2
Lebanon.....	1			Gas gob-fire.....	2	Excelsior Coal Co..	2
Lenzburg.....	1			Pit-cars	1	Gartside Coal Co..	1
Murphysboro ..	2			Premature blast..	3	Highland Coal Co..	1
Odin	2					Horn Colliery Co..	1
Pinckneyville ..	1					Jupiter Coal Co. .	2
Ridge Prairie ..	2					Kuhn & Schwind ..	1
St. John.....	1					Lebanon Coal Co..	1
Sato	2					Lenzburg Coal Co..	1
Trenton.....	1					Oakland Coal Co..	1
						Odin Coal Co.....	2
						Perry Coal Co.....	1
Totals	25		25		25		25

Non-Fatal Casualties—Fifth District—1893.

Date.	Name.	Age.	Residence.	Married.	Children.	Single.	Depend'nts	Character of Injury and Cause of Accident.	Time lost—days.
1892.									
July 13	Peter Reeb.....	56	Belleville...	1	6	7		Ankle injured lifting coal.....	12
" 15	Michel Hereyoy...	20	Trenton.....			1		Ankle injured by rolling rock...	10
" 16	H. Morvweather...	49	Murph'sb'ro ..			1		Hip dislocated by falling rock...	62
" 21	Frank Holberger ..	36	Breese			1		Back and hip injured by falling rock	14
" 21	John Gruconio	25	DuQuoin			1		Back injured by falling rock.....	60
" 22	William Towers....	27	Murph'sb'ro ..	1		1		Back injured by pit-car.....	30
Aug. 15	W. H. Isom.....	22	St. Johns.....			1		Arms burned, filling cartridge...	81
" 20	Fred. Tracy	22	Centrallia....	1	2	3		Leg broken by falling rock	60
" 22	Grant Winchester..	26	Murph'sb'ro ..			1		Back injured by falling coal	14
" 26	Mathew Hogan.....	35	Belleville....	1	3	4		Leg broken by falling coal.....	62
" 29	George Neuir.....	21	Marissa			1		Leg broken by pit-car.....	90
Sept. 5	John Moore.....	18	Murph'sb'ro ..			1		Collar-bone broken by pit-car....	60
" 7	Peter Boodman....	24	Be'leville....			1		Body injured by pit-cars.....	7
" 12	William Kreiger ..	34	Collinsville..			1		Leg injured by falling coal	*
" 28	George Reichert...	23	Marissa			1		Head injured by falling rock.....	6
Oct. 1	George Conklin....	25	Lebanon.....			1		Back injured by falling rock.....	14
" 4	George Ehlinger...	33	Freeburg.....	1		1		Leg broken by falling coal.....	90
" 24	Theo. Thompson...	19	Marissa			1		Body injured by pit-cars.....	20
" 24	Angelo Phillips....	37	Murph'sb'ro ..	1	2	3		Leg broken by falling coal.....	90
" 27	William Colbert....	30	Sparta	1	2	3		Hand cut off by coal falling down shaft	90
" 28	Jonathan Harris...	12	Marissa			1		Body injured by falling slate.....	†
Nov. 1	James Borneman...	28	Percy.....			1		Leg broken by coal descending down chute	90
" 3	Thomas Nau	22	Sparta			1		Body injured by pit-cars.....	15
" 19	William Brown....	21	Trenton.....			1		Finger mashed in compressor....	6
" 22	Joseph Burdo.....	26	Trenton.....			1		Face injured, air-valve blown out	12
" 22	Samuel Wiler.....	21	Belleville....	1		1		Body burned, premature blast....	90
" 22	James Buddel.....	25	DuQuoin.....			1		Arm fractured by pit-cars.....	20
" 23	John Gaunner.....	52	DuQuoin.....	1	6	7		Spine and leg injured by falling rock	90
" 24	David Thompson...	28	DuQuoin.....			1		Body injured by pit-cars	12
" 25	Thomas Parrott...	27	DuQuoin.....	1	2	3		Arm and hand injured by falling rock	14
" 26	Geo. Mathews.....	30	Wilderman...			1		Leg broken by falling coal.....	60
" 29	Peter Handroft....	40	O'Fallon.....	1	1	2		Leg broken by falling coal.....	70
Dec. 13	Dom. Genert.....	35	Belleville....			1		Body injured by falling rock.....	30
" 16	Charles Pebrack...	28	Lebanon.....	1		1		Ankle dislocated by falling rock...	30
" 16	John Harrel.....	22	Muddy Val....			1		Leg broken by pit-cars.....	90
" 17	A. Plauszenski....	35	Belleville....	1		1		Shoulder and back injured by falling rock	†
" 27	William Adams....	37	Murph'sb'ro ..	1	2	3		Body injured by pit-cars.....	20
" 29	Joseph Nalle.....	45	Murph'sb'ro ..	1	2	3		Body injured by falling rock	10

Non-Fatal Casualties—Fifth District—Concluded.

Date.	Name.	Age.	Residence.	Married.	Children.	Single.	Depend'ts	Character of Injury and Cause of Accident.	Time lost—Days.
1893.									
Jan. 6	Marion Cook.....	19	M'ddy Val'y.	...	1	...	1	Arm broken by pit-car.....	60
" 27	August Koch.....	27	Trenton .....	...	1	...	1	Back injured, dirt falling down shaft.....	14
Feb. 3	Charles Sebastin...	18	Lenzburg ..	...	1	...	1	Hands burned by powder explosion.....	10
" 8	Jacob Reis	29	Belleville....	1	...	1	1	Face injured by descending cage	20
" 20	George Rigg.....	29	Odin	1	...	1	1	Head injured by falling coal.....	42
" 20	A. K. Adams.....	25	Odin	1	...	1	1	Head and face injured by flying coal.....	6
" 13	James Weiss.....	22	Percy .....	...	1	...	1	Hand and foot injured by falling rock	6
" 14	Robert Heiple	30	Centralia ...	1	...	1	1	Leg broken by pit-car.....	90
" 19	Virgie Ammour.....	28	Sandoval ..	...	1	...	1	Leg broken by falling coal.....	60
" 27	Paul Santo	35	Murph'sb'ro ..	...	1	...	1	Leg broken by descending cage.	62
Mar. 21	Matt. Kurtznour...	30	Trenton .....	...	1	...	1	Head and leg injured by falling rock	20
" 21	George Weinch....	42	DuQuoin....	1	3	...	4	Leg broken, two places, by falling rock	90
" 22	Hugh Atkins.....	20	M'ddy Val'y.	...	1	...	1	Ribs broken by pit-cars	30
" 23	Jacob Danzier.....	42	Belleville....	1	3	...	4	Head injured by falling slate.....	10
" 24	Samuel Goodnick..	42	Belleville....	1	4	...	5	Body burned by powder explosion	6
" 29	Nick Zimmer	30	Sandoval ..	...	1	...	1	Ankle broken by falling clod.....	40
April 1	James Heaven.....	21	Wilderman...	...	1	...	1	Head injured, kicked by mule....	7
" 11	Dilley Carter	18	Carterville..	...	1	...	1	Body injured by falling off water-box	6
" 18	Frederick Bartels..	28	Rentchler ..	1	2	...	3	Body burned by explosion of powder	22
" 27	David Stephens....	44	Lenzburg....	1	1	...	2	Head and arms bruised by falling rock	14
" 28	Newton Warren ...	35	Rentchler ..	1	2	...	3	Body injured between pit-cars...	30
" 28	Michel Morris.....	44	Belleville....	1	1	...	2	Body injured by falling rock.....	10
May 3	Joseph Richmon...	67	Trenton	1	...	1	1	Ribs broken by compressor.....	30
" 10	Alex. Adams.....	23	Lenzburg....	1	...	1	1	Leg broken by pit car	62
June 1	Josiah Taylor, col.	70	Odin	1	...	1	1	Leg broken by falling coal.....	90
" 10	Frank Steinme'z....	65	Ogles	1	5	...	6	Body injured by flying coal.....	60
" 19	Alonzo Phelps.....	21	Carterville..	...	1	...	1	Body injured by falling coal.....	10
" 23	James Winters	59	Belleville....	...	1	...	1	Leg broken by falling rock.....	90
" 30	John Schmetz	34	Belleville....	1	4	...	5	Body injured by falling clod.....	10
	Totals			30	53	37	83		§

* Amputated, unable to work.

† Visitor in the mine.

‡ Not recovered July 1, 1893.

§ An average of 40 days lost time to the 64 men reported.

RECAPITULATION NON-FATAL CASUALTIES FIFTH DISTRICT, 1893.

Residence.	No.	Occupation.	No.	Cause of accident.	No.	Colliery.	No.
Belleville.....	16	Bailer.....	1	Air-valve, blw out	1	Becker, Charles...	1
Breese.....	1	Blatters.....	3	Coal fall, d'n chute	3	Cent. M. & Mfg. Co	1
Carterville.....	2	Cagers.....	2	Cage descending.	2	Consumers' C. Co.	1
Centralia.....	2	Drivers.....	12	Compressor.....	2	Consol. Coal Co....	17
Colinsville.....	1	Fireman.....	1	Falling clod.....	2	Crown Coal Co....	1
DuQuoin.....	6	Laborers.....	4	Falling coal.....	11	DuQuoin Coal Co...	2
Freeburg.....	1	Loaders.....	9	Fall'g r'ck & slate	21	Future Coal Co....	1
Harmony.....	1	Miners.....	29	Fall'g off wat'r b'x	1	Gartside Coal Co...	1
Lebanon.....	2	Runners.....	2	Flying coal.....	2	Glendale Coal Co...	2
Lenzburg.....	1	Shoveler.....	1	Lifting coal.....	1	Goalby & Son.....	1
Marissa.....	4	Timberer.....	1	Mule kick.....	1	Haensel, David....	1
Muddy Valley..	3	Trimmer.....	1	Pit-cars.....	15	Horn Coal Co.....	3
Murphysboro..	3	Visitor.....	1	Powder explosi'n	3	Ill. Cen. C. & S. Co.	1
Odin.....	3			Premature blast.	2	Jupiter Coal Co....	1
O'Fallon.....	1					Lebanon Coal Co....	2
Percy.....	2					L. M'dy C. & M. Co.	1
Rentchler.....	2					Muddy Val. C. Co.	3
St. Johns.....	1					Oakland Coal Co....	1
Sandoval.....	2					Oden Coal Co.....	3
Sparta.....	2					Pettinger & Davis.	1
Trenton.....	6					Reinecke, Conrad.	2
						Rentchler Coal Co.	2
						St. L. Ore & St'l Co	6
						St. L. & B. M'y C. Co	2
						Sandoval Coal Co...	2
						Val. & Gulf C. Co.	2
						Willis, D. P.....	1
						Wilderman C. Co.	2
						Zilesdorf, D.....	3
Totals.....	67		67		67		67

Table showing the number of persons injured, nature of injuries, time lost, with averages and percentages, Fifth District, 1893.

Nature of Injuries.	No.	Married.	Single.	Dependents.	TIME LOST.		Per cent- age of injuries.
					Total days.	Average days.	
Ankle broken.....	1	.....	1	.....	40	40	1.5
Ankles injured.....	4	2	2	8	52	13	6
Arms broken.....	2	.....	2	.....	60	30	3
Arm injured.....	1	1	.....	3	115	115	1.5
Backs injured.....	6	1	5	1	146	24	9
Bodies injured.....	17	9	8	31	388	23	25.5
Collar-bone broken.....	1	.....	1	.....	60	60	1.5
Faces injured.....	2	1	1	1	32	16	3
Fingers injured.....	1	.....	1	.....	6	6	1.5
Hands injured.....	3	1	2	3	106	35	4.5
Heads injured.....	7	3	4	7	105	15	10.4
Hip injured.....	1	.....	1	.....	62	62	1.5
Legs broken.....	16	9	7	20	1,246	78	23.9
Legs injured.....	1	.....	1	.....	.....	.....	1.5
Ribs broken.....	2	1	1	1	30	15	3
Shoulders injured.....	1	1	.....	1	.....	.....	1.5
Spine injured.....	1	1	.....	7	90	90	1.5
Totals.....	67	30	37	83	2,538	40	100.00

The statistical tables follow giving detailed information of the thirteen coal producing counties in this district.

Respectfully submitted,

JOHN G. MASSIE,

Inspector Fifth District, Belleville.

Clinton County, 1893—Concluded.

Name of firm, company or person operating mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.												Av. value of lump coal per ton at the mine.	
	Miners employed.		All other employes.	Boys employed under ground.	Running days in the year.	Kegs of powder used during year.	Casualties.		Prices paid per ton for hand mining.		Tons of coal mined.			
	Av. during the year.	Highest during year.					Killed.	Injured.	Summer.	Winter.	Total.	Lump coal.		Oth'r grades.
Consol. Coal Co...	100	100	7	...	166	519	1	6	*	*	81,069	61,799	19,270	\$1 00
Future C. & M. Co.	45	45	5	...	217	2,040	..	..	†	†	88,296	54,090	34,206	65
	50	65	12	2	204	2,858	..	1	\$0 30	\$0 35	85,730	59,105	26,625	70
Totals	195	210	24	2	.....	5,417	1	7	.....	.....	255,095	174,994	80,101	....
Averages ....	.....	.....	.....	.....	196	.....	..	..	\$0 30	\$0 35	.....	.....	.....	\$0 79

* Machine mine.

† Miners paid by the day.

Franklin County, 1893—Concluded.

Aaron King.....	2	2	1	....	90	.....	..	..	*	*	120	120	.....	\$2 12
Totals	2	2	1	....	.....	.....	..	..	.....	.....	120	120	.....	.....
Averages ....	.....	.....	.....	.....	90	.....	..	..	.....	.....	.....	.....	.....	\$2 13

* Machine mine.

Gallatin County, 1893—Concluded.

Equality Coal Co..	28	33	12	....	220	800	..	..	\$0 62.5	\$0 62.5	14,230	12,000	2,230	\$0 75
Brightn'r & Bald'n.	3	5	....	....	200	8	..	..	60	60	850	800	50	1 00
Leon Vogt.....	2	3	....	....	140	40	..	..	82.5	82.5	1,027	822	205	1 25
John S. Brinkley..	2	2	1	....	50	6	..	..	1 25	1 25	150	150	.....	1 50
Andrew Reid	3	4	1	....	230	75	..	..	75	75	1,200	1,200	.....	1 25
Totals	38	47	14	....	.....	929	..	..	.....	.....	17,457	14,972	2,485	.....
Averages ....	.....	.....	.....	.....	198	.....	..	..	\$0 65.1	\$0 65.1	.....	.....	.....	\$0 84

Hamilton County, 1893—Concluded.

J. C. Harper.....	3	6	3	....	40	.....	..	..	\$0 75	\$0 75	244	244	.....	\$1 50
Total	3	6	3	....	.....	.....	..	..	.....	.....	244	244	.....	.....
Averages ....	.....	.....	.....	.....	40	.....	..	..	\$0 75	\$0 75	.....	.....	.....	\$1 50

Jackson County, 1893—Concluded.

Name of firm, company or person operating mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.													Av. value of lump coal per ton at the mine.
	Miners employed.		All other employees.	Boys employed under ground.	Running days in the year.	Kegs of powder used during year.	Casualties.		Prices paid per ton for hand mining		Tons of coal mined.			
	Av. during the year.	High'st during year.					Killed.	Injured.	Summer.	Winter.	Total.	Lump coal.	Oth'r grades.	
St. L. O. & S. C. No. 5	208	208	18	12	258	2,679	..	5	+	.....	209,890	148,190	61,700	\$1 00
" " Harris'n	155	155	15	8	252	1,779	..	+	+	.....	154,713	115,240	39,473	1 00
" " " 3	75	75	20	5	222	751	..	1	+	.....	63,640	45,614	18,026	1 00
Gartside C. C. No. 1	17	17	4	1	365	300	1	+	+	.....	29,133	28,783	350	1 00
" " " 3	40	40	5	2	200	600	..	1	+	.....	57,220	42,095	15,125	1 00
" " " 4	50	50	12	2	240	700	..	+	+	.....	73,064	50,468	22,596	1 00
D. P. Willis	20	28	6	2	311	225	..	1	\$0 40	\$0 40	23,000	22,650	350	1 00
E. E. Poole	19	17	2	..	150	40	..	1	00	1 00	2,054	1,394	750	1 00
Big M'd'y C. & C. C.	40	54	10	..	237	1,500	..	..	28	28	45,356	38,655	6,701	80
M'd'y V'ly M. & M. C.	205	225	10	..	212	5,500	..	3	+	.....	196,285	114,532	81,753	87
J. H. Shepard	1	2	1	..	90	4	..	..	75	75	100	75	25	1 25
F. A. Mason	2	3	1	..	50	8	..	..	60	60	200	150	50	1 00
Wm. Campbell	2	3	1	..	50	16	..	..	75	75	400	400	..	1 25
Sato C. & M. Co.	14	19	22	3	200	1,006	..	..	+	.....	24,335	20,335	4,000	90
Bryden C. C. No. 1	25	28	9	..	215	76	2	..	+	.....	20,469	20,469	..	90
" " " 5	11	16	9	1	202	202	..	..	+	.....	24,783	24,783	..	90
H. Ditzler	3	4	1	..	225	50	..	..	35	40	1,600	1,200	400	1 00
Totals	878	944	146	36	..	15,436	3	11	.....	.....	926,242	674,943	251,299	.....
Averages .....	..	..	..	..	235	..	..	..	\$0 43.6	\$0 43.8	.....	.....	.....	\$0 96

† Machine mines.

† Miners paid by the day.

Jefferson County, 1893—Concluded.

G. W. Shelton	1	1	1	..	40	..	..	..	*	*	90	90	.....	\$1 50
Totals	1	1	1	..	40	..	..	..	.....	.....	90	90	.....	.....
Averages .....	..	..	..	..	..	..	..	..	.....	.....	.....	.....	.....	\$1 50

* Miners paid by the day.

Marion County, 1893—Concluded.

Centralia M. & M. Co.	93	128	67	2	265	3,027	..	2	\$0 56 1/4	\$0 56 1/4	124,500	91,400	33,100	\$0 90
Pittinger & Davis.	70	100	45	7	243	2,913	..	1	50	56 1/4	96,174	69,134	27,040	88
Odin Coal Co.	100	130	40	4	250	3,025	2	2	*30	*35	94,000	60,000	34,000	75
Sandov' C. & M. Co.	86	86	45	2	288	3,500	..	2	+	+	130,855	106,359	24,496	75
Superior C. & M. O.	39	42	10	..	200	..	..	..	*50	*50	30,000	22,400	7,600	1 17
Salem Coal Co.	10	17	6	..	150	..	..	..	60	60	5,000	3,500	1,500	1 25
Totals	389	503	213	15	..	12,465	2	7	.....	.....	480,529	352,793	127,736	.....
Averages .....	..	..	..	..	233	..	..	..	\$0 53.7	\$0 56.3	.....	.....	.....	\$0 84

* Miners paid gross weight.

† Miners paid by the day.

[illegible][illegible]

Perry County, 1893.—Concluded.

Name of firm, company or person operating mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.														Av. value of lump coal per ton at the mine.
	Miners employed.		All other employees.	Boys employed under ground.	Running days in the year.	Kegs of powder used during year.	Casualties		Prices paid per ton for hand mining.		Tons of coal mined.				
	Av. during the year.	Highest during year.					Killed.	Injured.	Summer.	Winter.	Total.	Lump coal.	Oth'r grades.		
DuQuoin C. M. Co.	125	175	75	4	300	5,000	2	2	*0 35	*0 37½	200,000	140,000	60,000	\$1 10	
Jupiter Mining Co.	85	104	50	6	171	1,836	2	1	*35	*37½	100,599	60,359	40,240	1 10	
Enterprise C. & C. C.	49	63	29	...	230	900	...	...	*35	*37½	74,500	50,000	24,500	84
Perry Co. C. M. Co.	34	45	17	...	180	781	1	...	*35	*37½	26,851	23,877	2,974	85	
Excelsior Co. M. C.	30	50	20	2	150	500	2	...	*35	*37½	100,000	74,000	26,000	95	
Horn Colliery Co.	105	150	30	...	200	2,800	1	3	*35	*37½	96,775	72,777	23,998	80	
Egyptian Min. Co.	36	36	11	3	225	1,066	...	...	+	+	27,000	24,000	3,000	95
Ill. Cent. C. & S. Co.	75	90	35	5	250	1,806	...	1	55½	55½	74,064	58,174	15,890	90	
D. C. Barber & Sons	17	23	7	...	180	800	...	...	35	35	14,000	12,000	2,000	81
G. L. Stockton	15	15	2	...	180	230	...	...	35	35	7,500	5,000	2,500	75
G. W. Brown	37	37	8	...	200	800	1	...	+	+	23,900	20,000	3,900	80	
Wood Bros	2	3	1	...	250	...	...	...	50	50	1,250	1,000	250	1 13
Solomon Maynard	1	1	1	...	120	8	...	...	50	50	...	400	...	1 27
Sun Coal & C'ke Co	45	55	25	2	200	800	...	...	*35	*37½	30,000	22,000	8,000	80
Greenwood Coal C	40	70	18	2	220	350	...	...	*35	*37½	52,022	33,353	18,669	1 00
Bryden C. & C. Co.	17	17	5	...	197	427	...	...	+	+	10,034	10,034	...	70
Superior C. M. Co.	14	14	3	...	200	150	...	...	+	+	19,284	11,556	7,728	1 00
Faust, Turner, Burk	3	6	1	...	200	60	...	...	50	50	1,972	1,972	...	1 00
Totals	730	957	338	24	...	18,314	7	7	...	...	860,151	620,502	239,649	...
Averages	...	...	...	...	203	...	...	...	\$0 50.8	\$0 50.8	...	...	...	\$0 95.

* Miners paid for gross weight.

† Machine mine.

‡ Miners paid by the day.

Randolph County, 1893.—Concluded.

Valley & Gulf C. C.	50	65	15	1	310	1,520	2	...	*	*	42,315	37,965	4,350	\$0 70
James Davison	12	16	13	1	235	915	...	...	\$0 25	\$0 25	20,180	20,180	...	75
George Gerlach	3	5	1	...	222	53	...	...	56¼	56¼	2,123	2,123	...	1 50
Coulterville M. Co.	20	25	5	1	52	232	...	...	*	*	5,403	5,403	...	1 25
Tilden Coal Co.	14	19	8	1	215	651	...	...	37.5	37.5	7,444	7,344	100	1 00
Barnard & Goalby	15	20	6	1	150	150	...	...	44	50	3,300	3,000	300	87
Goalby & Son No. 1	15	25	8	...	175	600	1	44	44	50	15,775	14,500	1,275	75
No. 2	15	25	6	...	325	325	...	...	50	50	9,200	8,200	1,000	85
L. Muddy C. & M. C.	20	30	6	2	200	536	1	50	50	50	19,150	16,740	2,410	75
W. M. & J. S. Lively	3	3	1	...	125	...	...	...	55	55	500	500	...	1 00
J. E. Dobyns	2	3	1	1	60	8	...	...	24	24	200	200	...	1 00
George Stanway	2	4	...	...	236	30	...	...	50	50	965	910	55	1 00
Rosborough C. M. C	15	20	5	...	200	614	...	...	30	35	18,500	18,500	...	65
R. H. Rosborough	40	50	9	...	250	867	...	...	30	35	26,000	26,000	...	75
Totals	226	310	84	8	...	6,501	4	...	...	...	171,055	161,565	9,490	...
Averages	...	...	...	...	220	...	...	...	\$0 36.6	\$0 37.5	...	...	...	\$0 78.

* Miners paid for gross weight.

Saline County—Fifth District—1893.

Name of firm, company or person operating mine.	Town or postoffice nearest the mine.	CHARACTER OF PLANT.										Geological number of seam.	Estimated number of acres worked out during the year.
		Drift, Slope, Shaft.	Power — Steam, Horse or Hand.	Shipping or Local mine.	Hand or Machine mine.	Long-wall or Pillar-and-Room.	Old, New or Abandoned mine.	Paid weekly, semi-monthly or m'thly.	Depth below the surface—feet.	Thickness of seam—feet and inches.			
Davenport & Co.....	Harrisburg.	Sh.	St.	Sh.	H.	P. R.	O.	W.	32	4.8	6	.12	
Davenport & Co.....	Newcastle...	Sh.	St.	Sh.	H.	P. R.	O.	W.	52	3.4	5	4.1	
H. P. Sittig.....	Stonefort...	D.	H.	Lo.	"	"	"	"	40	3.4	3	.04	
J. C. Heenan.....	Ledford	"	"	"	"	"	"	"	60	4.8	6	.04	
J. H. Musgrave.....	Eldorado	St.	St.	Sh.	"	"	"	S.M.	70	4.6	6	.5	
Daniel Curtner.....	S. America.	S'r	H.	Lo.	"	St'pg	"	W.	10	5	6	.25	
John Hawkins.....	Newcastle...	D.	"	"	"	"	"	"	40	3.7	3	.09	
Totals (7 mines).....												5.14	
Averages.....													

St. Clair County—Fifth District—1893.

Con. Coal Co., St. Louis—													
Schureman.....	Belleville...	Sh.	St.	Sh.	M.	P. R.	O.	M.	125	6	6	9	
Richland.....	"	"	"	"	H.	"	"	"	90	8	6	10	
Gartside No. 4.....	"	"	"	"	M.	"	"	"	205	6.6	6	9	
Knecht.....	"	"	"	"	"	"	"	"	125	6	6	10	
Dutch Hollow.....	"	"	"	"	H.	"	"	"	200	6	6	1.4	
Alma.....	R'ge Prairie	"	"	"	"	"	"	"	200	6	6	10.4	
Mentor.....	"	"	"	"	"	"	"	"	200	6	6	18	
White Oak.....	Marissa.....	"	"	"	"	"	"	"	147	6	6	11	
Abbey No. 4.....	Collinsville..	"	"	"	"	"	"	"	140	7	6	18	
Oakland Coal Co.....	Belleville...	"	"	"	M.	"	"	"	180	6.6	6	3.4	
John Harst.....	"	"	Hr.	Lo.	H.	"	"	W'y	55	6.6	6	.16	
Klingenfus Abend No. 1.	"	"	St.	"	"	"	"	"	65	6.6	6	.3	
Frank Murphy No. 1.....	"	"	Hr.	"	"	"	"	"	40	6.6	6	.04	
No. 2.....	"	"	"	"	"	"	"	"	60	6.6	6	.02	
John Kloess.....	"	"	St.	Sh.	"	"	"	"	110	7	6	2.4	
F. J. Bruggeman.....	"	"	"	Lo.	"	"	"	S.M.	130	6.6	6	.03	
Humbolt Coal Co.....	"	"	"	Sh.	"	"	"	"	125	6.6	6	1.2	
Conrad Reinecke.....	"	"	"	"	"	"	"	"	120	6.6	6	6.1	
Highland Coal Co.....	"	"	"	"	"	"	"	"	130	6	6	2.7	
George Reuther.....	"	"	Hr.	Lo.	"	"	"	W'y	95	6	6	.15	
John Maule, Main.....	"	Sl.	"	Sh.	M.	"	"	S.M.	100	6.6	6	5.9	
National.....	"	Sh.	"	"	H.	"	"	"	40	6.6	6	1.5	
Charles Hartman.....	"	"	"	"	"	"	"	"	85	6.6	6	4.8	
West End Coal Co.....	"	"	"	"	"	"	"	W'y	130	6.6	6	1.5	
John Brosius.....	"	"	"	Lo.	"	"	"	"	60	6	6	1.6	
Nicholas Weiss.....	"	"	"	"	"	"	"	"	60	6.6	6	.02	
Pittsburg Mine.....	"	"	St.	Sh.	"	"	"	"	132	6.6	6	1.1	
T. & H. Mining Co.....	"	"	"	"	"	"	"	S.M.	90	6.6	6	7.8	
Glendale Coal Co.....	"	"	"	"	M.	"	"	"	110	6	6	.....
Charles Becker.....	Freeburg.....	"	"	"	H.	"	"	M'y	130	7	6	1.7	
Ed. Avery.....	"	"	"	"	"	"	"	S.M.	150	6	6	2.3	
C. Strawbinger.....	French Vil'g	D.	Hr.	Lo.	"	"	"	W'y	50	6	6	.02	
George Brauch.....	Belleville...	Sh.	"	"	"	"	"	"	120	6	6	.02	
James Charleton.....	French Vill.	Sl.	"	"	"	"	"	"	75	6	6	.02	
Johnson Coal Co.....	Marissa.....	Sl.	St.	Sh.	"	"	"	"	125	6.6	6	2.8	
Advance Coal Co.....	"	"	"	"	"	"	"	"	87	6.6	6	5	
Lewis Grossman.....	Smithton.....	Sl.	Hr.	Lo.	"	"	"	"	60	6	6	.16	
Ben. Johnson.....	"	"	"	"	"	"	"	"	70	6	6	.12	
Consumers' Coal Co. No. 1	O'Fallon.....	Sh.	St.	Sh.	"	"	"	"	205	6.6	6	5	
Consumers' Coal Co. No. 2	"	"	"	"	"	"	"	"	185	6	6	1	
Joseph Taylor.....	"	"	"	"	"	"	"	"	203	6.6	6	3.8	
David Haensel.....	Lenzburg.....	"	"	"	"	"	"	M'y	191	6	6	.09	
Walnut Hill Coal Co.....	Binkner.....	"	"	"	"	"	"	S-M	191	7	6	1.6	
Crown Coal & Tow Co.....	Harmony.....	"	"	"	"	"	"	"	185	6.6	6	3.7	
Millstadt Coal & M. Co.....	Millstadt.....	"	"	"	"	"	"	"	48	5.6	6	.02	
Consolidated Coal Co.....	"	"	"	"	"	"	"	M'y	55	5.6	6	.04	

Saline County, 1893—Concluded.

Name of firm, company or person operating mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.													A. v. value of lump coal per ton at the mine.
	Miners employed.		All other employes.	Boys employed under ground.	Running days in the year.	Kegs of powder used during year.	Casualties.		Prices paid per ton for hand mining		Tons of coal mined.			
	Av. during the year.	Highst during year.					Killed.	Injured.	Summer.	Winter.	Total.	Lump coal.	Oth'r grades.	
Davenport & Co...	15	21	6	...	187	256	...	...	\$0 62.5	\$0 75	7,680	5,120	2,560	\$1 00
Davenport & Co...	35	46	10	...	275	755	...	...	62.5	75	22,617	15,078	7,539	1 25
H. P. Sittig	48	54	6	...	120	10	...	...	75	75	430	430	.....	1 00
J. C. Heenan	5	15	2	...	60	15	...	...	50	55	609	401	208	1 10
J. H. Musgrave	6	15	4	...	175	60	...	...	40	45	4,400	3,200	1,200	1 25
Daniel Curtner	4	4	1	...	60	20	...	...	50	50	500	500	.....	1 25
John Hawkins	2	3	1	...	90	15	...	...	50	50	200	200	.....	1 25
Totals	69	107	26	.....	1,131	...	...	...	.....	.....	36,436	24,929	11,507	.....
Averages .....	.....	.....	.....	.....	189	.....	...	...	\$0 60	\$0 69.6	.....	.....	.....	\$1 19

St. Clair County, 1893—Continued.

Con. C. Co., St. L.—	39	39	5	....	239	498	..	..	*	*	68,284	48,082	20,202	\$0 70
Schureman	50	54	4	....	262	2,954	..	1	+	+	91,426	78,864	12,562	65
Richland	48	54	6	....	320	525	..	1	*	*	65,484	53,324	12,160	70
Gartside No. 4	45	50	5	....	256	571	1	2	*	*	83,899	60,170	23,729	70
Knecht	15	15	2	....	230	467	..	..	+	+	15,215	11,374	3,841	75
Dutch Hollow	35	35	7	....	230	3,710	..	..	+	+	109,396	96,064	13,332	65
Alma	103	103	10	....	246	4,074	2	1	+	+	146,330	123,987	22,343	65
Mentor	37	37	10	....	225	2,958	..	1	+	+	69,809	60,150	9,659	65
White Oak	98	98	8	....	241	2,325	..	1	*	*	136,376	91,217	45,162	70
Abbey No. 4	18	18	8	....	246	253	1	1	*	*	36,859	33,168	3,691	55
Oakland Coal Co....	4	7	..	....	300	300	..	..	\$0 59	\$0 50	1,555	1,555	....	87
John Harst	4	6	1	....	300	36	..	..	37.5	37.5	2,400	2,400	....	1 00
Klingenfus, A. No. 1	3	5	1	....	300	16	..	..	50	50	756	400	356	1 00
Frank Murphy No. 2	2	2	1	....	300	8	..	..	50	50	200	200	....	1 00
John Kloess	45	85	7	....	245	445	..	..	37.5	50	27,988	26,428	1,560	60
F. J. Bruggemann	10	14	4	....	300	50	..	..	5	5	5,792	5,792	....	1 00
Humbolt Coal Co....	12	20	2	....	270	433	..	2	45	45	12,989	12,989	....	65
Conrad Reinecke	28	37	13	....	286	2,361	..	2	25	25	67,446	67,446	....	60
Highland Coal Co....	30	34	6	....	300	568	1	..	37.5	37.5	27,249	27,249	....	60
George Reuther	3	5	2	....	270	20	..	..	50	50	700	700	....	1 12
J. Maule, Main	50	150	20	....	300	1,560	..	..	*	*	63,000	60,000	3,000	75
National	30	50	5	....	300	463	..	..	37.5	50	18,520	15,000	3,520	75
Charles Hartman	30	50	5	....	300	1,275	..	..	37.5	50	51,000	38,550	12,450	75
West End Coal Co....	20	25	3	....	240	240	..	..	37.5	37.5	15,906	14,976	930	55
John Brosius	4	6	1	....	250	120	..	..	50	50	3,000	3,000	....	1 00
Nicholas Weiss	4	4	1	....	300	30	..	..	50	50	2,300	2,300	....	50
Pittsburg Mine	10	15	2	....	250	300	..	..	37.5	37.5	12,000	12,000	....	55
T. & H. Mining Co.	41	41	4	....	228	2,217	..	..	+	+	83,762	65,635	18,127	60
Glendale Coal Co....	50	60	8	....	240	750	..	2	*	*	63,800	51,000	12,800	60
Charles Becker	12	16	4	....	280	470	1	1	32	38	18,500	17,000	1,500	62
Ed. Avery	16	24	6	1	240	746	..	..	+	+	24,986	21,134	3,852	65
C. Strawbinger	3	4	1	....	300	60	..	..	50	50	2,600	2,000	....	1 00
George Brauch	2	3	2	....	200	80	..	..	50	50	2,400	2,400	....	75
James Charleton	2	2	1	....	150	30	..	..	50	50	1,100	1,000	100	1 00
Johnson Coal Co....	23	40	6	....	240	800	..	..	+	+	429,849	23,370	6,479	70
Advance Coal Co....	25	26	12	8	250	1,000	..	..	25	25	54,620	47,120	7,500	50
Lewis Grossman	2	2	1	....	225	54	..	..	62.5	62.5	1,350	1,350	....	1 25
Ben. Johnson	2	2	1	....	225	30	..	..	50	50	1,200	1,200	....	1 25
Consumers No. 1	40	55	15	2	250	1,870	2	1	30	30	55,483	40,898	14,585	68
Consumers No. 2	30	45	9	....	240	240	..	..	30	30	11,896	9,788	2,108	1 00
Joseph Taylor	32	40	12	....	210	1,122	..	..	30	35	42,245	36,670	5,575	60
David Haensel	5	9	2	....	240	329	1	..	30	30	9,390	8,210	1,180	75
Walnut Hill C. Co.	15	19	6	4	250	350	..	..	+	+	18,020	16,005	2,015	75
Crown C. & T. Co.	25	30	6	4	250	800	..	1	37	40	37,000	30,000	7,000	50
Millst't C. & M. Co.	21	36	4	....	249	..	..	..	43 3/4	50	16,563	15,199	1,364	78
Consol. Coal Co.	12	17	2	1	175	100	..	..	37.5	43 3/4	3,048	3,048	....	75

[illegible][illegible][illegible]

St. Clair County—1893—Concluded.

Name of firm, com- pany or person op- erating mine.	EMPLOYES, TIME, WAGES, POWDER, ACCIDENTS AND PRODUCT.													Av. value of lump coal per ton at the mine.
	Miners em- ployed.		All other em- ploys.	Boys employed under ground.	Running days in the year.	Kegs of powder used during year.	Cas- ualties.		Prices paid per ton for hand mining		Tons of coal mined.			
	Av. during the year.	High's dur- ing year.					Killed.	Injured.	Sum- mer.	Win- ter.	Total.	Lump coal.	Oth'r grades.	
D. Zilsdorf.....	33	42	14	...	190	2,000	3	+	+	+	59,096	-58,232	864	\$0 50
Leb'non C. & M. A.	60	60	10	...	300	700	1	2	*	*	43,676	-39,325	4,351	80
John Smith.....	2	2	1	...	125	...	...	...	\$0 50	\$0 50	325	325	...	1 25
Joseph Gast.....	6	6	4	...	206	130	...	...	43	50	5,168	5,168	...	75
Con. C. Co., G. Mt.	21	21	5	...	232	1,107	4	*	*	*	71,130	-52,957	18,173	70
J. Krantz & Co.....	12	14	2	...	200	200	1	37.5	50	50	76,788	76,533	255	75
O. C. & T. Co. No. 2	40	50	8	5	290	1,500	...	...	37	40	78,090	60,000	18,000	55
William Skellet....	25	28	6	...	200	800	...	+	+	+	17,334	-17,334	...	70
St. Clair Coal Co...	17	30	3	...	240	766	...	+	+	+	24,038	-15,129	8,909	60
Rentchler Coal Co.	30	30	4	...	243	1,548	2	+	+	+	54,315	-34,968	19,347	60
J. W. Moser.....	10	20	4	...	240	700	...	+	+	+	22,500	-20,000	2,500	70
W. Ogden & Bro....	10	20	4	...	270	490	...	+	+	+	2,500	-2,000	500	70
Oak Hill Coal Co..	19	25	4	1	230	940	...	30	35	35	28,178	-24,639	3,539	58
Siment & Son.....	2	3	1	...	200	25	...	50	50	50	3,300	3,000	300	1 00
James Beatty.....	6	8	3	...	150	150	...	50	50	50	7,500	7,500	...	1 00
Ebel & Bro.....	6	6	2	...	200	60	1	38	50	50	3,600	3,600	...	1 00
Con. C. Co., R. Hill	22	22	4	...	165	149	1	1	*	*	*21,331	-15,668	5,663	70
Walnut V. Coal Co.	4	5	2	...	100	80	...	35	40	40	2,000	-2,000	...	70
Total	1,450	1,881	322	33	...	48,863	11	29	...	...	2,133,870	1,778,787	355,083	...
Averages .....	...	...	...	...	243	...	...	...	\$0 3515	\$0 3918	...	...	...	\$0 66

* Machine mines.

† Miners paid by the day.

Washington County, 1893—Concluded.

Hugh Murrav	36	44	12	...	250	1,500	...	...	\$0 49	\$0 49	46,600	42,100	4,500
Kuhn & Schwind..	25	40	15	...	250	1,000	1	...	35	35	24,000	20,000	4,000
Grat'ndick & Lunt	3	4	2	...	240	40	...	...	62.5	62.5	1,600	1,400	200
Totals.....	64	88	29	...	2,540	1	...	...	...	...	72,200	63,500	8,700
Averages .....	...	...	...	...	247	...	...	...	\$0 44.9	\$0 44.9	...	...	\$0 87

Williamson County, 1893—Concluded.

Cryst'l Plate Gl. Co	122	122	14	6	265	2,061	...	...	*	*	111,156	94,937	16,219
St. L. & B. Md'y C C	60	75	106	4	250	4,145	2	...	+	+	165,893	80,742	85,061
Carterville Coal Co	125	125	25	7	195	3,030	...	...	+	+	125,760	65,000	60,760
John A. Young.....	5	5	3	...	200	35	...	...	+	+	3,894	3,494	400
T. J. Lansom.....	4	5	2	...	200	82	...	...	\$0 50	\$0 50	1,663	1,663	...
David Walden, Sr..	4	5	2	...	200	80	...	...	50	50	1,810	1,600	210
W. P. Allen.....	7	7	2	...	180	20	...	...	44	44	1,200	1,200	...
Wm. Reid.....	2	2	2	...	150	20	...	...	37.5	37.5	1,050	1,050	...
Wm. M. Rex.....	2	8	...	...	200	10	...	...	...	...	600	600	...
E. E. Ensminger...	2	2	2	...	110	30	...	...	+	+	930	880	50
Crossley & Hudd'n	2	4	...	...	250	40	...	...	62.5	62.5	3,400	2,400	1,000
G. F. Motsinger...	3	4	...	...	90	28	...	...	60	60	560	560	...
T. D. McGinnis....	2	2	2	...	90	10	...	...	60	60	600	600	...
Totals.....	340	366	160	17	...	9,591	2	...	...	...	418,426	254,726	163,700
Averages.....	...	...	...	...	200	...	...	...	\$0 53.2	\$0 53.2	...	...	\$0 94

* Machine mines.

† Miners paid by the day.

Recapitulation of Coal Mines by Counties—

COUNTIES.	MINES.						MINERS.									
	Number of mines.	Shipping mines.	Mines in local trade.	New mines.....	Abandoned mines.	Estimated number of acres worked out during year.	No. of miners and other employes.				Average number of running days.	Number of kegs of powder used.	Casualties.			
							Average No. of miners.	Highest No. of miners.	No. of other employes.	No. boys under ground.			Killed.	Widows.	Children.	Injured.
Clinton.....	3	3	..	..	34.3		195	210	24	2	196	5,417	1	1	3	7
Franklin.....	1	..	1	..	.05		2	2	1	..	90	..	..	..	..	..
Gallatin.....	5	1	4	..	1	2.15	38	47	14	..	168	929	..	..	..	..
Hamilton.....	1	..	1	..	..	.09	3	6	3	..	40	..	..	..	..	..
Jackson.....	17	13	4	..	6	80.08	878	944	146	36	235	15,436	3	2	8	11
Jefferson.....	1	..	1	..	..	..	1	1	1	..	40	..	..	..	..	..
Marion.....	6	6	..	..	..	43.35	389	503	213	15	233	12,465	2	..	..	7
Perry.....	18	15	3	..	2	82.81	730	954	338	24	203	18,314	7	4	8	7
Randolph.....	14	10	4	1	2	21.44	226	310	84	8	220	6,501	..	..	..	4
Saline.....	7	3	4	..	1	5.14	69	107	26	..	189	1,131	..	..	..	..
St. Clair.....	64	46	18	..	2	215.57	1,450	1,881	322	33	243	48,863	11	5	19	29
Washington.....	3	2	1	..	..	5.14	64	88	29	..	247	2,540	1	1	4	..
Williamson.....	13	3	10	5	2	28.56	340	366	160	17	200	9,591	..	..	..	2
Totals	153	102	51	6	16	523.68	4,385	5,419	1,361	135	.....	121,187	25	13	42	67
Averages .....	..	..	..	..	..	..	..	..	..	..	227.2	..	..	..	..	..

Whole number of openings reported in 1892, 164.

Number of new mines or places opened during the year, 6.

Number of mines exhausted or abandoned during the year, 17.

Whole number of openings reported for 1893, 153.

Fifth Inspection District—1893.

COUNTIES.	PRICES AND PRODUCTS.						Average value of coal per ton at the mine.		Aggregate value of total products.
	Average prices for hand-mining.			Tons of coal mined.					
	Sum-mer.	Win-ter.	Aver-age for the year.	Total tons.	Tons of lump.	Tons of other grades.	Lump.	Other grades	
Clinton.....	\$0 30	\$0 35	\$0 33.34	255,095	174,994	80,101	\$0 79	\$0 149	\$150,265
Franklin.....				120	120		2 125		255
Gallatin.....	65.1	65.1	65.1	17,457	14,972	2,485	838	276	13,238
Hamilton.....	75	75	75	244	244		1 50		366
Jackson.....	43.6	43.8	43.7	926,242	674,943	251,299	958	513	775,297
Jefferson.....				90	90		1 50		135
Marion.....	53.7	56.33	55.5	480,529	352,793	127,736	843	407	349,406
Perry.....	50.8	50.8	50.8	860,151	620,502	239,649	948	379	679,484
Randolph.....	36.6	37.5	37.3	171,055	161,565	9,490	775	329	128,269
Saline.....	60	69.6	66.6	36,436	24,929	11,507	1 192	405	34,374
St. Clair.....	35.15	39.18	37.84	2,133,870	1,778,787	355,083	661	331	1,289,142
Washington.....	44.9	44.9	44.9	72,200	63,500	8,700	865	295	57,508
Williamson.....	53.2	53.2	53.2	418,426	254,726	163,700	942	359	298,684
Totals.....				5,371,915	4,122,165	1,249,750	.....	.....	\$3,776,423
Averages.....	\$0 40.2	\$0 44.7	\$0 43.21	.....	.....	.....	\$0 803	\$0 377	.....

THE COAL MINER.

In addition to the general information relating to the coal industry of Illinois, some important statistics have been secured relating to the coal miner; his place of birth, age, conjugal condition, number of persons in family, number of rooms occupied, together with the amount of insurance with which some are provided in case of sickness, disability or death.

In gathering this information, it was hoped that the persons employed in and about the mines would coöperate with the Bureau in this undertaking; however, very little encouragement was received, thus making it necessary to send a special agent into the field to obtain the facts desired.

The extent of this investigation was necessarily confined to a limited number of the mining towns of the State, sufficient, however, it is thought, to give a fair reflex of the whole.

It was also found that a large number of the men employed, in the mines visited, were of foreign birth, and not at all conversant with the English language, therefore could not be readily made acquainted with the object of these inquiries; they also entertained an ungrounded fear as to the motives in seeking the information.

Sixteen towns were visited, and facts were obtained from 2,288 miners, of whom 1,228 were heads of families, living at home; the others being either single men and boys or married men whose families still reside in their native land in Europe. These latter generally find lodging and board with their countrymen.

There are many deplorable features about the life of the coal miner, the most noticeable being the almost total absence of individuality, which may be attributed largely to the following causes:

1. The system of contracts.
2. The "company tenement houses."
3. The "company stores."

THE CONTRACTS.

A contract is generally understood to be an agreement entered into by two or more persons, which to be fair and valid, all parties thereto should have a voice in fixing the conditions.

In the cases under consideration, when justly and impartially viewed, there seems to be in reality but one party to these contracts between the operators and miners, and but one interest that is conserved, that being the interest of the operator or "the party of the first part;" apparently the conditions are drawn very favorably to the operator, who agrees to nothing except to give employment under its provisions to the miner, or to "the party of the second part," the latter is compelled to sign the document or be denied work; these conditions in many cases bring severe hardships and inability to procure the necessities of life.

Some of the provisions of these contracts are such that in signing them the miner surrenders rights that inhere to employés in all other branches of industry. The tendency of these contracts is to cause the signers to be considered more in the light of chattels than free men. By the terms certain rights are waived that are common to all men, while the provisions seem to be in violation of the laws of the State, and are apparently imposed on the miner to circumvent all laws that may be enacted for his protection. The following are some of the conditions of the contracts to which reference has been made:

* And the party of the second part further agrees that he will not stop work, leave the employ of the said party of the first part, or join or become a party to, either directly or indirectly, any strike or combination for the purpose of obtaining, or the intent of which is to obtain from, or cause the company, party of the first part, to pay the miners an advance in wages, or pay beyond what is specified in this contract. Nor will he in any manner aid, abet or countenance any such strike, combination or scheme whatever, which has for its purpose any such object or design, during the time specified in the first clause of this contract. And if the said party of the second part at any time shall violate any of the provisions of this contract in this regard, he shall thereby forfeit all claims for coal prior thereto mined and not paid for, and the said party shall be fully released from all liability on account of this contract, or any labor performed by the said party of the second part.

† It is hereby expressly agreed and understood by the party of the second part, that should he become a tenant of the party of the first part during the term of this agreement, then in case of the termination of this

contract, either by his discharge from the employ of said first party, or in any other way, the term of such tenancy shall at once cease and be determined without notice, and he will vacate the premises so occupied by him, upon verbal notice of the agent or superintendent of said first party, written notice to quit being expressly waived, and on failure to do so shall be deemed guilty of forcible detainer of such premises and that he will not be entitled to demand or receive any part of the wages due him for labor performed (should the party of the first part so elect) until such premises are vacated, and the keys thereof delivered to the office of the said first party.

† X. Any tenant of the company, upon leaving its services, whether voluntarily or by discharge, will not be entitled to receive any part of the wages due him for labor performed until he shall have vacated the premises occupied by him (should the superintendent or other person in charge of the mine for the time being so elect) and presented the keys of the same at the office.

‡ XI. The miners may, at their option and expense, employ a check weighman, whose duty shall be to see that the coal is weighed correctly by the weighman employed by the company: *Provided*, that the party so employed shall be a miner in the employment of this company, and in good standing at the time he may be selected for the position.

COMPANY TENEMENT HOUSES.

In some of the mining towns, the company owning or operating the mines, also owns many houses which they rent to their employés. Coal mines are generally located on the outskirts of a town, and the homes of the miners are, as a rule, in very close proximity to the mines. Everything is suggestive of coal; standing out prominently is the black, grim-looking, upper or outer equipment; close by a large pile of slack or refuse, often towering high above the house tops, the roads and spaces surrounding the houses are usually covered with cinders or coal dust, there being a total absence of flowers, grass or other vegetation. The houses are small, the architecture the same throughout, giving the entire place a very monotonous appearance. Many of these houses are in a neglected condition and clearly show a want of much needed repairs.

* "Employer and Employés. An Act to protect employés and guarantee their right to belong to labor organizations. Approved June 17, 1893."

† "Landlord and Tenant. An Act to revise the law in relation to landlord and tenant. Approved May 1, 1873."

‡ "An Act to provide for the weighing of coal at the mines, and to repeal a certain act therein named. Approved June 16, 1887."

Of the 1,228 families reported, 650, or 52.92 per cent., pay house rent; of this number 255, or 39.08 per cent., rent houses from their employer. Under the clause of the contract relating to the condition of the tenancy of these houses, the miner, having waived written notice, is in constant dread of being without house and home, at the pleasure of the owner, and without due process of law.

COMPANY STORES.

The "company stores," or "truck stores," as they are more commonly called, have been a "bone of contention" between coal operators and miners for many years. That many abuses have been practiced in connection with the "truck system" there can be no doubt. A continued agitation for years against the system has resulted in much needed reform, and many of the abuses formerly complained of have been removed.

The agitation against these stores undoubtedly led up to the passage by the General Assembly, in 1891, of "An act providing for the payment of wages in lawful money, and to prohibit the truck system, and to prevent deductions from wages except for lawful money actually advanced," and, also, "An Act to provide for the weekly payment of wages by corporations."

A careful canvass of the State shows that 38 of these company stores are yet maintained or conducted by firms or companies operating coal mines. The companies operating the mines, at which these 38 stores are located, report a total of 10,114 employés; 13 of these stores are located in 4 counties in the First district, where 4,851 men are employed; in the Second district there are 8 stores in 3 counties and 3,562 men; the Third district has 8 stores in two counties with 729 employés; the Fifth district has 9 stores in 6 counties and 962 men employed. There are no stores of this kind reported in the Fourth district. The following table gives the number of stores and number of men employed for two years, 1885-1893:

DISTRICTS.	YEAR 1893.		YEAR 1885.	
	Number of stores.	Average number of men employed.	Number of stores.	Average number of men employed.
First	13	4,851	16	2,067
Second	8	3,562	9	526
Third	8	739	24	1,812
Fourth			7	554
Fifth	9	962	19	967
The State.....	38	10,114	75	5,886

Comparing the results of the investigation for the two years, it is found that the number of stores has decreased 37, or nearly 50 per cent., while, on the other hand, the number of employés at the mines where these stores are located has increased 4,228, or 71.8 per cent. The decrease in the number of stores during the past eight years is no doubt attributable to the growth and positive disfavor that has steadily been asserted against the truck-store system, and which finally culminated in the enacting of the laws before cited. However, these laws were subsequently set aside by the Supreme Court of the State on the ground that they interfered with the right of private contracts. It is generally believed, however, that their enactment by the legislature did much to prejudice the public mind against these stores to the extent that their final disappearance is only considered a question of time.

The increase in the number of miners employed at the several places in the eight years is accounted for by the incidental increase in the number of men employed in the industry.

The coal report of the Bureau for the year 1885 contained an enumeration of stores maintained by coal companies in the State at that date, together with the average number of employés working at the mines where the stores were located. The report gives the number of stores as 75, and 5,886 as the number of miners employed at the several places. The conclusion from this investigation was that "company stores were located at one-fourth of the principal mines in the State and that one-fifth of the miners were exposed to their influences."

Using the same basis of estimating for this year, it is found that company stores are located at one-eighth of the principal mines and that two-sevenths of the miners were subject to their constraint.

It will be observed that the number of these stores has decreased in all the districts, notably in the Third and Fifth districts, and their final extinction from the Fourth district.

A final table is presented giving a list of the mine owners, and location of these stores, the number of stores and the number of men employed at each place.

Company or Truck Stores operated by Coal Mine Operators in Illinois, 1893.

NAME OF PERSON, FIRM OR COMPANY.	Post Office.	County.	Number of mines.	Number of stores.	Number of men employed.
Briar Bluff Coal Co	Briar Bluff	Henry	1	1	49
Brown, G. W.	Pinckneyville	Perry.....	1	1	45
Cahill, James.....	Peru	LaSalle.....	1	1	235
Chi., Mil. & St. Paul Co ..	Braceville	Grundy	2	1	634
Chi., Minonk Coal Co....	Minonk	Woodford	1	1	281
Chi., Wil. & Ver. Coal Co.	Braidwood	Will	3	1	1,037
" ..	Laceyville	Bureau	1	1	230
" ..	Seatonville.....	"	1	1	294
" ..	Streator	LaSalle.....	2	1	800
Coal Valley Min. Co.....	Cable	Mercer	2	1	445
Collier's Co-op. Coal Co.	Bartonville	Peoria	1	1	33
Davenport & Co	Newcastle	Saline	1	1	56
DuQuoin Coal Co	DuQuoin	Perry.....	1	1	250
Empire Coal Co	Gilchrist	Mercer	1	1	175
Foley, William	Mapleton	Peoria	1	1	35
Hakes, Emerson.....	Rutland	LaSalle.....	1	1	102
Horn Colliery Co.....	DuQuoin	Perry.....	1	1	180
Illinois Valley Coal Co...	Oglesby	LaSalle.....	1	1	378
Kuhn & Schwind.....	Dubois	Washington.....	1	1	55
Lowery, Frank	Orchard Mines ..	Peoria	1	1	31
Muddy Valley Coal Co...	Muddy Valley....	Jackson	1	1	235
Newsom Bros	Kingston Mines ..	Peoria	1	1	107
Oglesby Coal Co	Oglesby	LaSalle.....	1	1	226
Peoria Coal Co	Wolecott	Peoria	1	1	112
Perry County Coal Co...	DuQuoin	Perry.....	1	1	62
Potter & Co., L.	Mapleton.....	Peoria	1	1	30
Sheffield Min. Co	Sheffield	Bureau	1	1	65
Sholl Bros	Peoria	Peoria	2	1	110
Spring Valley Coal Co. .	Spring Valley....	Bureau	4	1	1,957
Standard Coal Co	Seneca	LaSalle.....	1	1	68
Sunday Creek Coal Co ..	Coal City	Grundy	1	1	175
Taylor, Joseph	O'Fallon	St. Clair	1	1	52
Tilden Coal Co	Tilden	Randolph	1	1	27
Whitebreast Fuel Co....	Ladd	Bureau	1	1	347
Wil. Gardner Coal Co....	Gardner	Grundy	1	1	141
Wil. Min. & Mfg. Co.....	Clark City.....	Kankakee	1	1	276
Wil. Star Coal Co	Diamond	Grundy	1	1	460
	Coal City	"	2	1	319
34 firms and companies.	33 towns	15 counties.....	48	38	10,114

The foregoing list gives in detail the names of the mine owners, with the number and location of these stores, the number of miners reported as working in and about these mines and subjected to the odious "truck system."

The right to buy and sell in the market of one's own choice is the supreme and cardinal principle of the right of private contract. Every neighborhood in which the "truck store" prevails strangles the principle of commercial freedom and the in-

alienable right and liberty to trade with those offering the best and greatest inducements. Many of the evils and the injustice forced upon the miner by the system are but slightly understood, or comprehended, by those who may receive their wages in cash, be they much or little. A case in point came under the observation of a representative of the Bureau at one of the mining towns of the State, and it doubtless imperfectly represents thousands of similar cases more or less harsh in their operations. The wife of a miner having checks on the company store desired to purchase a pair of shoes for herself; the kind and style she wanted were not kept in this store; across the street was another store, where she found just the kind and style of shoe desired. She proffered these checks in payment and was willing to pay one dollar more in checks than the merchant asked for the shoes, in order to gratify her taste, though she could ill afford to spare the extra amount; the merchant with a sense of honor declined the offer on the ground that he disliked to accept the bonus from a neighbor, and further, that he would be obliged to purchase at the company store the amount of the tickets, himself, or trade them to some other person. There can be no doubt that the truck store system is an injustice of the grossest kind, and to the miner especially; he is coerced at times to buy in the dearest, instead of the cheapest market, thus reducing and destroying very materially the purchasing power of his already reduced wages; he seldom, if ever, enjoys the advantage of entering an open market to supply his household needs. Nor is this all; himself and family are deprived from exercising or gratifying any faculties of tastes, or of likes and dislikes. These capabilities are blunted and those broader lines of character which tend to a higher civilization are debased or permanently paralyzed.

It will be conceded by all that the coal miner leads a toilsome life; his work is fraught with dangers; his earnings are small and limited; there can be no doubt of the necessities of his family, which is uniformly large, and yet under the baneful influence of the truck store he is prevented from entering the free and open market with his hard earned money to supply his wants and enjoy that freedom so dear to every one, to buy where he pleases, and that which his judgment and means may

justify also to realize the further satisfaction of every free man, that of paying spot cash.

There are many other evils that may be attributed directly or indirectly to the truck system, among them is the plan of issuing orders to miners in payment of wages; usually some certain merchant is selected by the company who is to accept the orders, he requiring the miner to stand a discount of 8 or 10 per cent.; when the merchant presents these orders to the company for payment, he too must submit to the same discount from their face value. Thus the whole system constitutes a guerrilla warfare against the honest merchant who would deal fairly and justly with the miner were it not for these subterfuges resorted to by the employer.

COMPULSORY INSURANCE.

Information has been collected from several mining places in the State concerning a plan adopted by some operators of coal mines compelling all miners in their employ to take out or, rather, accept a policy or certificate of insurance against accidents, both non-fatal and fatal that may happen to them, but only while engaged at their work in or about the mine or in actual employ of the mine owner.

As near as the facts regarding this matter can be obtained, it is found that the insurance placed on each employé is an arbitrary requirement on the part of the proprietor, the employé having no voice whatsoever, in the transaction. From the information obtained, it is found that the proprietor or operator of the mine selects some casualty insurance company and contracts for a "blanket policy," embracing or covering all its employés; this policy is taken or written in the name of the mining company, which is solely the beneficiary.

The miners are then notified by the employer of the plan, the terms and the amount that will be paid in case of disability or death, also the amount and terms of the payment of the assessment fee or tax that will be levied and retained from their wages on each pay-day. All employés are required to contribute. To present these conditions more fully, copies of the notice given by one company to its employés, and the certificates issued are here given as follows:

To Our Employés."

"A proposal has been submitted to us by a large and reliable insurance company whereby *every employé may be insured against any and every accident* which may happen to him, whether such accident occur while engaged in our work, or on the street, at home or elsewhere, so long as he is in our employ.

The benefits to be derived from this insurance are as follows:

1. In case of personal injury not resulting in death within fifty weeks, a sum equal to but not exceeding one-half weekly wages of the injured employé and the doctor's bills and medicine during the period of his disablement, but limited in each case to fifty weeks, and in no event to exceed \$1,500.

2. In case of injury resulting in death within fifty weeks of the accident, a sum equal to but not exceeding one-half of one year's wages of the deceased employé, the doctor's bills, medicine and funeral expenses, and in no event to exceed \$1,500.

In order to obtain this insurance an assessment will be made at the rate of two cents on each dollar earned by you per week, which we deduct weekly from your wages. Thus, an employé earning \$5.00 a week, ten cents will be deducted; \$10.00 a week, twenty cents; \$12.50 a week twenty-five cents, and so on. In order to obtain this insurance the insurance company requires all the employés to contribute.

We become personally responsible for the payment of these benefits to you, and recommend the insurance as giving you the best protection against accidents for the small sum charged.

The insurance begins January 1st, 1892. The first assessment will be made for the week ending January 9th, and retained pay-day, January 15th, 1892.

Very respectfully,

....., Coal Mining Co."

(Copy of certificate or policy issued by the same company to the miner.)

Casualty Insurance and Security Co.,

of

Cash capital, \$1,000,000.

This is to certify that we hold policy in the above company, thereby securing for our employés the following benefits and indemnities if disabled or fatally injured by accident:

1. In case of personal injury happening upon our premises, or elsewhere, while actively employed in our service, not resulting in death within fifty weeks of the accident, a sum equal to, but not exceeding one-half, the weekly wages of the injured employé and the doctor's bills during the period of his or her disablement, but limited in each case to fifty weeks, and in no event to exceed \$1,500.

2. In case of injury resulting in death within fifty weeks of the accident, a sum equal to, but not exceeding one-half of one year's wages of the deceased employé, including doctor's bills and funeral expenses, and in no event to exceed \$1,500.

We further certify that, being one of our employés, is entitled to benefits of said insurance so long as he remains in our service.

Signed: Coal Mining Co.

Dated: Illinois, 189..

Another coal company issued the following certificate:

Casualty Insurance and Security Co.,

of

Cash capital, \$1,000,000.

This is to certify that we hold policy in the above company, thereby securing for our employés the following benefits and indemnities if disabled or fatally injured by accident at the mines, or elsewhere, resulting,

(A) In disablement of an employé, as aforesaid, a sum equal to, but not exceeding, one-half of the weekly wages during the period of his or her disablement (limited to a period not exceeding fifty weeks), and in addition thereto the doctor's bill.

(B) In the total extinction of sight of one eye or the loss, by actual separation, of one hand or one foot, a sum equal to, but not exceeding, twenty-five per cent. of one year's wages, and in addition thereto the doctor's bill.

(C) In the total extinction of sight of both eyes, or the loss by actual separation, of both hands or both feet, or one hand and one foot, or the loss, by actual separation, of one hand or one foot, each accompanied with the total extinction of sight of one eye, a sum equal to, but not exceeding, fifty per cent. of one year's wages, and in addition thereto the doctor's bill.

(D) In death within three months from the date of the accident, a sum equal to, but not exceeding, fifty per cent. of one year's wages, and in addition thereto the doctor's bill and funeral expenses.

We further certify that, being one of our employés, is entitled to benefits of said insurance as long as he remains in our service.

Signed: Coal Company.

Dated: Illinois, 189..

One mining company deducts 2.7 cents from each dollar earned by the miner. To this the company adds a half-cent of each dollar of the total amount of the pay-roll. This constitutes a fund which, in case of accident while at work, the miner receives medical attendance and nursing, and a monthly pay of one-half of what his earnings were at the time of the accident,

based on an average of the previous six months. At the end of six months, all payments from the insurance company to the miner cease. In case of death, from an accident while at work, the heirs of the deceased receive a sum of money equal to one-half of the earnings of the miner for the previous six months. The mining company is relieved of the cost of defending any damage suits for all accidents at its mines. In case judgment is obtained against the mining company, it is protected by the insurance company to the extent of twenty-five thousand dollars for any single accident.

Another company deducts four cents from each day's earnings of every miner in its employ. In case of injury to an employé, resulting from an accident, attendance is provided and an amount similar to that noted in the previous case cited is paid monthly to the injured person. If death results from an accident, five hundred dollars is paid to the heirs of the miner.

Protection is guaranteed by the insurance company to the mining company against the costs of suits and judgments.

At many of the mines of the State the miners are not insured, consequently no deductions are made on this account from their earnings. Several companies insure against financial liability for accidents to employés. One mining company was noted that insures against all liabilities for accidents, and also insures its workmen against accident, without deducting anything from their wages. Another mining company employing a large number of men voluntarily provides medical and surgical attendance in case of accident to an employé, and pays a certain amount to the injured person for each working day of lost time; also defrays funeral expenses in case of death resulting from an accident at its mines.

The principal objection advanced by the miners against compulsory insurance is that many of them belong to benevolent and mutual insurance societies, and that they regularly set apart from their earnings the amount they are required to pay as dues or assessments for insurance held in these societies, and that they prefer to retain this membership and hold such insurance. While the objections made may not apply to every particular case, they are chiefly true concerning the employer

and the means used to compel any form of insurance. Men engaged in hazardous occupations should carry accident insurance, but the amount and terms, the selection of the company, society or association, should be left to the choice of each individual.

There are other objections associated or attaching to this system of treatment of the miners, as indicated in the foregoing documents and statements, which will fully justify the assertion that the whole plan is objectionable and offensive in the extreme and will not admit of palliation.

One of the reasons stated by the mining companies in justifying the scheme is that a large majority of the miners make no provision whatever for accidents; that at such times they live on credit, or are mainly dependent on charitable persons, and are often without proper attendance.

The insurance companies claim that the placing of this insurance tends to decrease the number of accidents; that it, in a measure, supplements the ordinary examination and inspection of mines; instigates the prompt attention to improper working conditions and the removal of unsafe appliances.

Information was obtained of 736 miners regarding life insurance carried by them as members of different societies, the provisions of which are for a certain sum as a benefit to be paid daily or weekly in case of disability and a stipulated amount to be paid to their heirs in case of death.

The following table gives the amount of insurance carried by the 736 men and the cost of the same, also the average amount of benefits payable in case of disability or death:

AMOUNT OF BENEFITS TO BE PAID IN CASE OF DEATH.	No. of men in each class.	Aggregate amount of insurance in each class.	Average amount of insurance in each class.	Aggregate cost of insurance and ben- efits in each class.	Average cost per man in each class per year.	Average cost of in- surance per dollar insured, including benefits.	BENEFITS.	
							Number.	Amount pay- able weekly.
For \$100 or less	391	\$21,560	\$55	\$2,450	\$6 27	\$0.11.4	306	\$5 06
From \$100 to \$500 inclusive	101	48,790	483	1,938	19 19	0.03.97	96	5 14
From \$500 to \$1,000	150	144,100	961	3,497	23 31	0.02.43	148	5 47
From \$1,000 to \$1,500	29	37,340	1,288	933	32 16	0.02.5	28	8 78
From \$1,500 to \$2,000	29	58,000	2,000	1,065	36 73	0.01.84	27	6 15
From \$2,000 to \$2,500	32	67,100	2,097	1,241	38 77	0.01.85	23	11 38
From \$2,500 to \$3,050	4	11,750	2,938	200	50 00	0.01 7	6	9 50
Totals	736	\$388,640	.....	\$11,323	.....	.....	639	.....
Averages .....	.....	.....	\$528	.....	\$15 38	\$0.02.91	.....	\$5 69

Of the 736 miners carrying this class of insurance, 639 report a weekly benefit which averages \$5.69, the rates averaging from \$5.06 to \$11.38. The lowest weekly benefit reported is \$2.00; the highest \$16.00.

RENT AND EARNINGS.

Of the total number of families reported, 650 or 52.93 per cent. are living in rented houses. The amounts paid per month for rent vary from \$18.00 to \$150.00 per annum; 110 families or 16.92 per cent. pay \$50.00 or less; of these 78 pay \$48.00; 107 or 16.62 per cent. pay \$60.00; 204 or 31.39 per cent. pay \$72.00; 56 or 8.62 per cent. pay \$84.00, and 33 or 5.08 per cent. pay \$96.00. 630 or 96.92 per cent. of the families pay \$100.00 or less per annum. The average annual rent for all is \$69.00 or \$5.75 per month, for an average of 3.83 rooms each.

It is important in this connection to make a comparison of the average monthly earnings and the amount expended in rents by the miners, and for this purpose the following table together with the analysis of the same is reproduced from the Sixth Biennial Report of this Bureau:

Average earnings of all miners per man per month in eleven mines, reproduced from the Sixth Biennial Report, 1890.

MINES.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	Averages.
SYSTEM.	L. W.	L. W.	L. W.	P. R.	P. R.	P. R.	L. W.	L. W.	L. W.	P. R.	P. R.	
COAL.	3½ ft.	3½ ft.	3½ ft.	5½ ft.	5½ ft.	5½ ft.	3 ft.	3 ft.	5½ ft.	8 ft.	7 ft.	
PRICE.	90 cts	90 cts	90 cts	80 cts	M'ch.	80 cts	95 cts	95 cts	55 62½ c.	50 cts	M'ch.	
May.....	\$37 68	\$38 60	\$40 49	\$32 50	\$36 42	\$27 99	\$33 66	\$36 63	\$30 66	\$60 48	\$27 62	\$36 61
June.....	28 56	39 05	32 76	.....	40 93	40 93	22 77	35 55	25 14	51 75	24 08	34 15
July.....	44 35	47 14	35 00	19 07	38 21	40 62	5 08	33 90	30 06	42 20	30 73	34 29
August.....	45 10	52 55	42 64	44 70	38 16	32 34	36 20	44 43	46 87	12 00	39 67	39 51
September.....	18 04	45 02	13 25	58 10	28 04	43 38	37 40	44 85	38 90	33 90	39 29	36 38
October.....	45 12	53 16	2 85	63 45	30 17	44 23	37 72	52 79	45 74	44 14	37 57	41 54
N.v mber.....	45 33	45 68	33 92	52 73	34 75	35 65	32 23	39 30	48 13	35 63	30 40	39 43
December.....	38 01	24 87	25 48	41 63	34 31	29 75	31 09	36 11	46 85	18 11	27 11	32 12
January.....	20 67	.....	23 03	45 97	.....	31 04	24 94	33 11	36 24	25 04	26 89	29 66
February.....	31 00	.....	27 32	41 81	.....	29 85	29 98	39 43	33 58	23 37	29 09	32 05
March.....	27 79	.....	29 61	34 76	.....	22 59	21 27	.....	28 46	19 73	25 93	26 27
April.....	34 51	.....	34 05	44 47	.....	27 27	30 11	.....	20 71	29 06	21 50	30 21
Yearly averages.	\$31 65	\$43 26	\$29 09	\$43 82	\$36 20	\$33 90	\$28 60	\$39 76	\$36 59	\$32 90	\$30 12	\$35 53
Yearly earnings..	415 80	346 03	349 08	482 02	289 60	406 80	343 20	397 60	439 08	394 80	361 44	384 14

"This table presents some strong contrasts in the matter of monthly earnings for single months.

"In mine III, for instance, in the month of September the whole force earned only \$2.85 each. This is accounted for by the fact that the mine was running only seven days in September and three days in October, and

owing to the large number of men awaiting employment, it was impossible for many of them to get more than one day's work out of three. Yet this insignificant amount of labor is properly placed in this table as a month's work, as it represents all the work which was possible to the men at this mine during the month; it also illustrates the degree of enforced idleness which is sometimes imposed upon men willing to work. In this case there were 280 men on the pay-rolls in September, and they had only seven days' work; in October there were only 142, or one-half the former number of men who got any work at all, and then for only a part of three days, with the result that their average earnings were \$2.85 each. In the succeeding month, however, 290 men were given full employment and received \$33.92 each for their labor. In other words, after waiting the greater part of two months in idleness, these men obtained a full month's work on the third. * * * A similar instance to the foregoing is found in mine VII, in the month of July, in which the mine was running only five days, and the men earned only \$5.08 each. There were 436 men who shared this work in July, while the average number on the force was over 500. Another case of small earnings is one in which the men received only \$12.00 each for a month's time, and 13.3 days' labor; and there are several in which the average disbursements were less than \$20.00 per man.

"On the other hand, the highest average earnings for any one month was \$63.45, which was shared by 321 men; the next was \$60.48, disbursed to 123 men; the next, \$58.10 to 284 men, and there are five other months in which the average earnings of 1,676 men was over \$50.00 each.

* * * * *

"The final average, and the conclusion reached by this exhibit is that 5,356 miners and machine operatives in Illinois, working under every variety of terms and conditions, received, as the result of a year's labor, an average of \$35.53 each per month.

"The averages in the different counties are as follows:

"Three mines in Bureau county, \$35.89; three mines in LaSalle county, \$37.97; two mines in Will county, \$34.15; one mine in Sangamon county, \$36.59; one mine in Macoupin county, \$32.90, and one mine in Madison county, \$30.12."

It thus appears from the foregoing tables that the average monthly earnings of miners is \$35.53 each; the average amount of rent paid per month is \$5.75, and the average number rooms occupied 3.83; the amount of rent per month being 16.2 per cent. of the monthly earnings.

AGES OF MINE EMPLOYÉES.

The ages of the persons employed in and about the mines take a very wide range, covering every period of years from under

14 years to 72 years, inclusive; the average age of all being 31 years, 5.5 months. The following table gives the record in detail:

Number of Persons of Specified Age.

		PRESENT AGE.																							
TOWNS.	Under 14 years.	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33				
Totals	3	38	50	44	51	67	43	49	52	63	66	83	96	101	86	97	70	119	61	75	76				
Barclay .....	..	..	..	..	..	..	..	..	1	..	1	..	..	..	1	2	1	3	3	..	1			
Bloomington .....	..	1	2	1	2	1	..	1	2	3	1	..	4	4	..	3	..	2	1	3	..			
Coalville .....	..	1	2	1	..	4	..	1	..	..	1	2	1	..	..	..	..	3	2	3				
Kangley	1	3	2	1	3	7	5	5	3	4	8	7	6	10	11	10	4	10	5	7	3				
Ladd	2	..	..	..	..	2	..	..	1	2	3	4	6	..	..	1	1	2	2	1	2			
LaSalle .....	..	3	1	4	3	2	5	4	2	3	4	2	2	4	1	4	5	9	1	3	4			
Minonk .....	..	2	2	1	..	..	..	1	1	2	1	1	1	2	2	3	2	5	3	4	4			
Oglesby	1	5	4	1	3	3	2	6	9	3	5	3	5	3	5	6	7	4	3	1	6				
Pana	12	4	8	11	5	3	5	10	8	5	10	14	8	12	13	16	19	7	9	6					
Peru .....	..	4	7	..	1	2	3	1	1	1	1	2	1	1	1	..	1	1	1	2	2			
Roanoke .....	..	1	4	1	5	2	7	2	4	2	5	6	1	10	3	7	6	1	3	3	4			
Sandoval .....	..	1	2	3	6	5	2	2	5	4	2	4	5	2	4	4	3	5	5	4	3			
Spring Valley	2	9	12	11	12	25	6	14	6	9	17	17	25	30	24	15	14	21	12	17	17				
Streator .....	..	6	7	2	5	6	9	4	4	9	7	13	17	13	10	19	9	26	6	12	15			
Taylorville .....	..	2	1	1	1	1	2	1	5	5	3	4	5	5	5	4	1	6	4	2	5			
Wenona .....	..	..	..	1	1	2	2	4	3	3	5	5	7	4	5	2	5	2	5	2	..			

Number of Persons of Specified Age—Concluded.

TOWNS.	PRESENT AGE.																								Over 50 years.	Total.	AVERAGE.	
	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	Yrs.	Mos.									
Totals	68	91	53	55	61	49	84	31	33	45	30	67	16	15	22	18	46	a 114	2,288	31	5.5							
Barclay.....	1	1	..	2	1	1	1	1	..	..	1	..	1	..	..	..	..	2	23	34	9.4	
Bloomington.....	1	5	2	2	4	5	3	3	4	3	2	1	2	1	1	1	3	5	80	35	9.7							
Coalville.....	2	2	..	2	..	..	..	..	2	1	3	1	1	1	1	1	3	3	40	32	5.1			
Kangley.....	6	13	7	2	4	4	9	2	4	3	5	1	1	1	1	1	3	8	192	31	5							
Ladd.....	1	2	..	..	1	2	..	1	..	..	..	1	..	..	..	..	..	2	45	29	9.9
LaSalle.....	6	8	3	3	9	2	11	2	1	5	1	2	1	..	4	2	6	13	143	34	11.5							
Minonk.....	2	5	2	2	4	1	3	1	1	2	1	2	..	..	..	1	1	4	70	32	7.9				
Oglesby.....	5	3	..	4	1	..	2	3	..	6	2	3	..	1	1	1	2	6	120	30	2.9							
Pana.....	6	10	7	8	5	5	5	1	3	3	3	2	1	4	2	3	6	12	271	30	2.6							
Peru.....	1	..	1	1	2	2	2	1	1	3	1	2	1	..	1	1	1	8	61	32	1							
Roanoke.....	..	1	3	2	1	2	2	3	3	3	2	6	..	1	1	..	4	10	121	31	11.1							
Sandoval.....	2	5	2	3	7	5	4	1	..	1	1	2	..	..	3	2	..	11	120	31	10.1					
Spring Valley.....	16	16	10	12	9	9	17	5	5	5	2	17	7	1	4	2	9	14	473	30	1							
Streator.....	13	12	12	9	9	8	13	7	7	7	17	..	4	2	4	7	14	351	33	10.2								
Taylorville.....	4	7	2	2	5	1	7	..	2	1	2	2	1	1	..	..	2	2	100	31	8.6					
Wenona.....	2	1	1	1	2	3	3	1	1	1	1	3	..	2	..	..	..	78	29	10					

a Twelve 51 years, thirteen 52 years, thirteen 53 years, eight 54 years, seventeen 55 years, fourteen 56 years, six 57 years, five 58 years, two 59 years, ten 60 years, three 61 years, one 62 years, one 63 years, one 64 years, one 65 years, one 66 years, one 67 years, one 68 years, two 70 years, one 71 years, one 72 years.

Of the total number, 1,239 or 54.15 per cent. are the average age, their average being under 23 years, 7.6 months; while 1,049 or 45.85 per cent. are over the average age, their average being 40 years, 7.4 months. The range of the ages of 1,767 or 77.23 per cent. is from 21 to 40 years, with an average of 30 years, 9.1 months, showing that a very large per cent. of the men employed are in the prime of life. 407 or 17.79 per cent. are over 40 years of age, while 114 or 4.98 per cent. have passed the fiftieth milestone on their journey through life, their average age being 56 years, 1.3 months.

BIRTHPLACE.

(Until recent years the nationality of the mine employés of the State was very largely American, English, Scotch, Welch, Irish and German; in later years, however, several other nationalities have been introduced; these are composed mainly of the poorer and less educated classes, such as: Slavonians, Hungarians, Polanders and Italians, which classes belong to that element of immigrants decoyed to this country by large employers of labor, who placarded the poorest districts of Europe, and advertised America as a country flowing with milk and honey; subsidized steam ships to bring these people here and at the same time exaggerated the wages paid here for labor.

It is conceded by mine managers generally that the American, English, Scotch, Welch, Irish and German miners are more skillful and subject to higher discipline, in the proper working of coal mines. The statistics of the nativity of the 2,288 miners is given in the following table:

Birthplace of mine employés.

TOWNS.	Total number re- porting.	NATIVE BORN.			FOREIGN BORN.													Total.
		Illinois.	Other states.	Total.	Austria.	Belgium.	England.	France.	Germany.	Hungary.	Ireland.	Italy.	Poland.	Scotland.	Sweden.	Wales.	Others.	
Totals	2,288	269	197	466	255	31	244	66	221	219	81	252	166	143	69	23	22	1,822
Barclay.....	23	1	7	8	....	1	12	..	1	....	1	....	..	....	..	..	..	15
Bloomington.....	80	8	2	10	1	..	....	..	4	....	3	....	2	3	54	..	3	70
Coalville.....	40	5	1	6	1	..	9	..	1	5	....	..	..	10	4	4	..	34
Kangley.....	192	9	2	11	111	..	6	1	11	26	5	3	..	11	..	..	7	181
Ladd.....	45	..	1	1	..	..	10	..	..	..	2	26	6	..	..	..	..	44
LaSalle.....	143	24	16	40	17	..	19	..	25	..	21	5	8	7	1	..	..	103
Minonk.....	70	2	1	3	3	..	..	..	5	2	3	..	49	5	..	..	..	67
Oglesby.....	120	19	15	34	1	5	42	..	..	..	5	1	2	18	4	4	2	86
Pana.....	271	64	41	105	52	2	15	15	51	6	4	..	13	3	..	..	5	166
Peru.....	61	7	2	9	..	..	..	1	46	..	3	..	1	..	..	..	..	52
Roanoke.....	121	3	..	3	1	9	7	29	25	..	4	54	..	8	..	1	..	118
Sandoval.....	120	50	41	91	3	..	5	..	9	..	3	3	1	2	1	1	1	29
Spring Valley.....	473	19	22	41	11	14	53	20	13	9	15	177	70	41	1	5	3	432
Streator.....	351	13	17	30	2	..	49	..	17	205	4	2	1	30	3	7	1	321
Taylorville.....	100	43	28	71	..	..	14	..	6	..	3	1	..	4	..	..	..	29
Wenona.....	78	2	1	3	52	..	3	..	6	..	..	..	13	1	..	..	..	75

Of the 2,288 miners, 466 or 20.37 per cent. of the whole were born in the United States, of whom 269 or 57.73 per cent. are natives of Illinois, while 197 or 42.27 per cent. were born in other states of the Union; 1,822 or 79.63 per cent. are of foreign birth.

The whole number may be divided into two classes: first, those of the United States and of such other countries whose people more readily assimilate, because their aspirations, habits and standard of living are nearly the same as the American, namely: England, Scotland, Wales, Germany, France, Ireland, and Sweden. The other class being the Austrians, Hungarians, Italians, Polanders, Belgians and others, whose customs and habits of living are generally below that of the other class. This gives of the first class 1,313 or 57.39 per cent., of the other class 975 or 42.61 per cent.

Whether the introduction of this latter class of people into our coal-fields will in any way benefit even the operator is exceedingly doubtful. The labor troubles throughout the United States within recent years confirms the statement that disputes between employer and employé are more readily and satisfactorily settled, when intelligence guides the way, than when confronted with a class of men unable or unwilling to listen to

reason, and whose chief reliance in winning a disputed point is by the application of physical force, instead of through intelligent organization or arbitration.

CONJUGAL CONDITION AND RESIDENCE.

The relative number of single, married and widowers in the mines is presented in the following table:

Conjugal Conditions and Residence.

TOWNS.	Whole number reporting.	CONJUGAL CONDITION			RESIDENCE.			Number of miners whose families still reside in Europe.
		Single.	Married.	Widowers.	At home.	Boarding in private family	In boarding house.	
Totals	2,288	838	1,419	31	*1,604	557	127	175
Barelay.....	23	1	22	.....	23	.....	.....	.....
Bloomington.....	80	28	52	.....	62	17	1	.....
Coalville.....	40	17	23	.....	31	9	.....	.....
Kangley.....	192	59	130	3	82	110	.....	60
Ladd.....	45	23	22	.....	16	29	.....	9
LaSalle.....	143	46	94	3	113	26	4	11
Minonk.....	70	15	53	2	56	13	1	2
Oglesby.....	120	50	70	.....	96	17	7	.....
Pana.....	271	90	178	3	220	51	.....	10
Peru.....	61	22	37	2	58	3	.....	.....
Roanoke.....	121	59	59	3	81	31	9	9
Sandoval.....	120	49	68	3	89	19	12	.....
Spring Valley.....	473	243	225	5	266	123	84	42
Streator.....	351	74	273	4	308	39	4	14
Taylorville.....	100	26	71	3	80	20	.....	.....
Wenona.....	78	36	42	.....	23	50	5	18

* Married men and single men living with parents.

Of the whole number 838 or 36.63 per cent. are single, 1,419 or 62.02 per cent. are married and 31 or 1.35 per cent. are widowers. In this table is also presented the place of residence of those considered, whether living at home or boarding, either in a private family or at boarding houses. The number found living at home was 1,604 or 70.1 per cent., 29.9 per cent. were boarding. A very striking feature presented is the number of men boarding with private families, a system that prevails to a great extent among the foreign element. Of the 684 persons reported as boarding, 557 or 81.43 per cent. live with private families, while but 127 or 18.57 per cent. live in boarding houses; of the 557 living with private families 519 or 93.18 per cent. live with the families of miners included in this table, while only 38 are with other families.

The manner of boarding in private families prevails, to a greater extent with the Austrians (Slavonians) and Italians, than any other nationality. The towns of Ladd, Wenona and Kangley exceed in this respect; the percentage at Ladd of those living with private families is 64.44, at Wenona 64.10 and at Kangley 57.3. At Barclay all are reported as living at home; at Peru 95.08 per cent. live at home; at Streator 87.75 per cent.; at Pana 81.18 per cent., and at Minonk, Oglesby and Taylorville, each have 80 per cent. living at home. It is also of interest to note the number of men reported as being married whose families still reside in Europe, there being 175 or 12.33 per cent. of the whole. Of the 130 married men reported at Kangley 60 or 46.15 per cent. have their families in their native country; at Wenona 18 or 42.86 per cent. at Ladd 40.91 per cent., and at Spring Valley and Roanoke 18.67 and 15.12 per cent. respectively.

HOMES.

It has been heretofore stated that the homes of the miners are usually situated in the outskirts of the towns and in close proximity to the mines, sometimes hidden from view by the huge piles of refuse or slack. These homes, it will be noted, are in many instances very much over-crowded, making it extremely difficult to maintain a proper standard of cleanliness, health or morality. The following table gives the number of families, rooms and occupants:

Rooms and Number of Occupants.

NUMBER OF ROOMS TO A TENEMENT, BY TOWNS.	POPULATION.				Total number of rooms in all tenements.	Average number of persons to a room.
	Number of families having specified number of rooms.	Number of per- sons in families.	Number of board- ers.	Total number of persons occupy- ing rooms.		
Totals	1,228	6,067	519	6,586	4,709	1.4
BARCLAY	22	118	.....	118	73	1.60
Two rooms.....	5	16	.....	16	10	1.60
Three rooms.....	15	82	.....	82	45	1.80
Six rooms.....	1	10	.....	10	6	1.67
Twelve rooms.....	1	10	.....	10	12	0.83
BLOOMINGTON	49	243	.....	243	197	1.23
Two rooms.....	4	18	.....	18	8	2.25
Three rooms.....	8	37	.....	37	24	1.54
Four rooms.....	22	108	.....	108	88	1.23
Five rooms.....	13	76	.....	76	65	1.17
Six rooms.....	2	4	.....	4	12	0.33
COALVILLE.....	23	121	4	125	98	1.27
Two rooms.....	1	4	.....	4	2	2.00
Three rooms.....	4	22	.....	22	12	1.83
Four rooms.....	10	52	3	55	40	1.37
Five rooms.....	5	21	1	22	25	0.81
Six rooms.....	2	14	.....	14	12	1.17
Seven rooms.....	1	8	.....	8	7	1.14
KANGLEY.....	67	325	116	441	252	1.75
Two rooms.....	10	51	2	53	20	2.65
Three rooms.....	22	94	27	121	66	1.83
Four rooms.....	20	98	54	152	80	1.90
Five rooms.....	10	60	13	73	50	1.46
Six rooms.....	3	18	3	21	18	1.17
Eight rooms.....	1	2	14	16	8	2.00
Ten rooms.....	1	2	3	5	10	0.50
LADD	13	63	33	96	44	2.18
Two rooms.....	2	11	.....	11	4	2.75
Three rooms.....	4	15	5	20	12	1.66
Four rooms.....	7	37	28	65	28	2.32
LASALLE.....	84	446	2	448	410	1.12
Two rooms.....	3	13	.....	13	6	2.17
Three rooms.....	8	36	2	38	24	1.58
Four rooms.....	25	126	.....	126	100	1.26
Five rooms.....	20	111	.....	111	100	1.11
Six rooms.....	20	115	.....	115	120	0.96
Seven rooms.....	6	34	.....	34	42	0.81
Nine rooms.....	2	11	.....	11	18	0.61

Rooms and Number of Occupants—Continued.

NUMBER OF ROOMS TO A TENEMENT, BY TOWNS.	POPULATION.				Total number of rooms in all tenements.	Average number of persons to a room.
	Number of families having specified number of rooms.	Number of per- sons in families.	Number of board- ers.	Total number of persons occupy- ing rooms.		
MINONK.....	49	268	.....	268	149	1.80
Two rooms.....	22	122	.....	122	44	2.77
Three rooms.....	13	73	.....	73	39	1.87
Four rooms.....	8	37	.....	37	32	1.16
Five rooms.....	4	27	.....	27	20	1.35
Seven rooms.....	2	9	.....	9	14	0.64
OGLESBY.....	68	334	9	343	282	1.21
Two rooms.....	3	10	.....	10	6	1.67
Three rooms.....	27	119	.....	119	81	1.47
Four rooms.....	14	75	.....	75	56	1.34
Five rooms.....	12	57	.....	57	60	0.95
Six rooms.....	5	29	.....	29	30	0.97
Seven rooms.....	7	44	9	53	49	1.08
PANA.....	162	719	60	779	626	1.24
One room.....	2	9	.....	9	2	4.50
Two rooms.....	13	44	13	57	26	2.19
Three rooms.....	41	168	16	184	123	1.49
Four rooms.....	68	310	16	326	272	1.20
Five rooms.....	27	127	10	137	135	1.01
Six rooms.....	10	59	2	61	60	1.01
Eight rooms.....	1	2	3	5	8	0.62
PERU.....	37	214	.....	214	161	1.33
Two rooms.....	2	11	.....	11	4	2.75
Three rooms.....	8	33	.....	33	24	1.37
Four rooms.....	13	74	.....	74	52	1.42
Five rooms.....	7	41	.....	41	35	1.17
Six rooms.....	4	38	.....	38	24	1.58
Seven rooms.....	2	11	.....	11	14	0.79
Eight rooms.....	1	6	.....	6	8	0.75
ROANOKE.....	55	290	7	297	214	1.39
Two rooms.....	4	16	.....	16	8	2.00
Three rooms.....	19	83	.....	83	57	1.46
Four rooms.....	19	107	7	114	76	1.50
Five rooms.....	7	39	.....	39	35	1.11
Six rooms.....	4	30	.....	30	24	1.25
Seven rooms.....	2	15	.....	15	14	1.07
SANDOVAL.....	65	290	7	297	262	1.13
Two rooms.....	4	19	.....	19	8	2.37
Three rooms.....	23	97	.....	97	69	1.41
Four rooms.....	22	102	.....	102	88	1.17
Five rooms.....	10	42	.....	42	50	0.84
Six rooms.....	2	10	.....	10	12	0.83
Eight rooms.....	2	10	.....	10	16	0.62
Nine rooms.....	1	5	7	12	9	1.33
Ten rooms.....	1	5	.....	5	10	0.50

Rooms and Number of Occupants—Concluded.

NUMBER OF ROOMS TO A TENEMENT, BY TOWNS.	POPULATION.				Total number of rooms in all tenements.	Average number of persons to a room.
	Number of families having specified number of rooms.	Number of per- sons in families.	Number of board- ers.	Total number of persons occupy- ing rooms		
SPRING VALLEY.....	179	931	192	1,123	710	1.58
Two rooms.....	7	26	.....	26	14	1.86
Three rooms.....	46	198	48	216	138	1.78
Four rooms.....	98	523	126	649	392	1.66
Five rooms.....	12	73	11	84	60	1.40
Six rooms.....	10	65	6	71	60	1.18
Seven rooms.....	3	25	.....	25	21	1.19
Eight rooms.....	2	17	.....	17	16	1.06
Nine rooms.....	1	4	1	5	9	0.56
STREATOR.....	264	1,279	27	1,306	911	1.43
Two rooms.....	38	172	.....	172	76	2.26
Three rooms.....	112	519	7	526	336	1.57
Four rooms.....	85	414	15	429	340	1.24
Five rooms.....	19	110	3	113	95	1.19
Six rooms.....	7	45	2	47	42	1.12
Seven rooms.....	2	14	.....	14	14	1.00
Eight rooms.....	1	5	.....	5	8	0.62
TAYLORVILLE.....	68	313	5	318	265	1.20
Two rooms.....	3	9	.....	9	6	1.50
Three rooms.....	23	89	.....	89	69	1.29
Four rooms.....	22	97	3	100	88	1.14
Five rooms.....	18	100	2	102	90	1.13
Six rooms.....	2	18	.....	18	12	1.50
WENONA.....	23	113	57	170	55	3.09
One room.....	3	12	.....	12	3	4.00
Two rooms.....	13	68	21	89	26	3.41
Three rooms.....	2	7	13	20	6	3.33
Four rooms.....	5	26	23	49	20	2.45

Here is the record of 1,228 families consisting of 6,067 persons, being an average of 4.94 persons to each family; adding the 519 boarders found living in these families the total number of persons is made to be 6,586, giving an average of 5.4 persons to each family. The total number of rooms in which these families live is 4,709, averaging 3.8 rooms to each family and 1.4 persons to each room.

The tenement having the highest number of rooms occupied by one family was found at Barclay, it had 12 rooms and was occupied by 10 persons. The tenements having the smallest number of

rooms occupied by one family, was found at Pana and Wenona, having one room each, 2 at the former and 3 at the latter place.

In one instance a family of seven persons was found occupying a tenement of one room, at another 6 persons; in another case, a family of 5 persons occupied 4 rooms and had 26 boarders, a total of 31 persons or an average of nearly 8 persons to a room; one family of 6 persons occupying 2 rooms found it convenient to accommodate 2 boarders; another family with 3 rooms boarded 15 men making a total of 18 persons. In still another instance a family of 4 persons occupying 4 rooms accommodated 16 boarders, an average of 5 persons to each room.

At LaSalle is found the smallest average number of persons to a room, being 1.12 and at Wenona the highest average being 3.09. In nine towns the average number of persons to a room is below 1.4, the average for all; in the other 7 towns the average is greater, being 1.6. The highest number of rooms to a family is 4.88 at LaSalle, the lowest average at Wenona where it is 2.39. The conditions of the homes at the latter place are exceedingly bad, being greatly over-crowded; and singular as it may seem, here also was found the highest average number of boarders to each family, being 2.48. Further statistics of this place shows that 13 families occupying 2 rooms each, have 21 boarders, the latter nearly equaling the number of rooms, the number of persons in the families proper being 68, making a total of 89 persons in 26 rooms. Two families each having 3 rooms accommodate 13 boarders, which gives 2 boarders for each room while the membership of the two families alone exceeds the number of rooms occupied.

The following table gives the number of families and boarders living in tenements having specified number of rooms with averages and percentages:

No. of Families and Persons Occupying Specified No. of Rooms.

NUMBER OF ROOMS.	POPULATION.				Total number of rooms in all tenements.	Average number of persons to a room.	Percentage.
	Number of families having specified number of rooms.	Number of persons in families.	Number of boarders.	Total number of persons occupying rooms.			
Totals.....	1,228	6,067	519	6,586	4,709	1.4	100.00
One room.....	5	21	.....	21	5	4.2	.41
Two rooms.....	134	606	36	642	268	2.4	10.91
Three rooms.....	375	1,476	118	1,794	1,125	1.6	30.54
Four rooms.....	438	2,186	275	2,461	1,742	1.41	35.67
Five rooms.....	164	884	40	924	820	1.13	13.36
Six rooms.....	72	455	13	468	432	1.08	5.86
Seven rooms.....	25	160	9	169	175	0.97	2.80
Eight rooms.....	8	42	17	59	64	0.92	.65
Nine rooms.....	4	20	8	28	36	0.78	.32
Ten rooms.....	2	7	3	10	20	0.5	.16
Twelve rooms.....	1	10	.....	10	12	0.83	.08

Here it is shown that 952 families, or 77.5 per cent. of the whole number, occupy 4 rooms or less, and accommodate 83 per cent. of the boarders. The average is 3.3 rooms to each family; the average persons to each of these families is 5.2 with an average of 1.6 persons to each room.

Another table follows which presents the number of families, by nationalities, giving membership, boarders and rooms occupied, with averages and percentages:

NATIONALITIES.	POPULATION.				Total number of rooms in all tenements.	Average number of persons to a room.	Percentage.	Average number of persons to a family.	Average number of rooms to a family.
	Number of families	Number of persons in families.	Number of boarders.	Total number of persons occupying rooms.					
Totals.....	1,228	6,067	519	6,586	4,709	1.4	100.00	5.4	3.8
Illinois and other States.....	233	1,058	14	1,072	941	1.14	18.98	4.6	4
Austria.....	68	263	175	438	231	1.9	5.54	6.4	3.4
Belgium.....	20	100	2	102	77	1.33	1.63	5.1	3.9
England.....	186	964	29	993	780	1.27	15.14	5.3	4.2
France.....	30	155	9	164	113	1.45	2.44	5.5	3.8
Germany.....	136	736	11	747	537	1.39	11.08	5.5	3.9
Hungary.....	176	795	28	823	551	1.49	14.33	4.7	3.1
Ireland.....	66	362	4	366	296	1.24	5.37	5.5	4.5
Italy.....	54	248	143	391	199	1.96	4.40	7.2	3.7
Poland.....	91	474	99	573	288	1.99	7.41	6.3	3.2
Scotland.....	91	531	3	534	393	1.34	7.41	5.9	4.4
Sweedon.....	43	213	.....	213	175	1.22	3.50	5	4
Wales.....	15	83	1	84	63	1.33	1.22	5.6	4.2
Others.....	19	85	1	86	60	1.43	1.55	4.5	3.2

The average number of persons to each room, for all is found to be 1.4; the averages for the native born, and for Belgium, England, Germany, Ireland, Scotland and Wales, are below the general average, while the average of Austria, Hungary, Italy, Poland and France is above that average; 233 families or 19 per cent. were born in the United States, these families have a total membership of 1,072 including 14 boarders, and occupy 941 rooms, with an average of 1.14 persons to each room; this is the smallest average of any class; the Poles head the list with the highest average of persons to a room being 1.99, these are closely followed by the Italians with 1.96 and the Hungarians with 1.9.

The boarders are found in larger numbers with the Italians, the average being 2.65 to each family, the Austrians having 2.57, and 1.09 with the Polish families.

The average number of persons to each family is found to be 5.4, the range being from 4.5 to 7.2; the average number of rooms to each family is 3.8 for all, the greatest number being 4.2, the smallest 3 1.

The following table gives by nationalities the number of families with the different number of rooms in the tenements occupied, the number of persons in each family occupying the same, and the different number of rooms occupied by each class:

Number of Families and Rooms Occupied.

NATIONALITY.	Number of families.	NUMBER OF FAMILIES IN TENEMENTS OCCUPYING—										
		1 room.	2 rooms.	3 rooms.	4 rooms.	5 rooms.	6 rooms.	7 rooms.	8 rooms.	9 rooms.	10 rooms.	12 rooms.
Native born	233		10	66	92	44	16	3	1		1	
Austria	63	2	14	18	27	5	1		1			
Belgium	20			10	6	2	1	1				
England	186	1	8	51	71	25	19	7	1	2		1
France	30		4	12	7	4	2			1		
Germany.....	136		13	31	59	20	10	2	1			
Hungary	176		35	91	43	6	1					
Ireland	66		4	14	19	13	10	4	1	1		
Italy	54		6	17	25	4	1				1	
Po and	91	2	30	26	22	9		1	1			
Scotland	91		1	23	35	15	9	6	2			
Sweden.....	43		3	7	19	12	2					
Wales.....	15			3	8	3		1				
Others.....	19		6	6	5	2						
Totals	1,228	5	134	375	438	164	72	25	8	4	2	1

Number of Persons and Rooms Occupied.

NATIONALITY.	Number of persons in families.	NUMBER OF PERSONS LIVING IN TENEMENTS HAVING—										
		1 room.	2 rooms.	3 rooms.	4 rooms.	5 rooms.	6 rooms.	7 rooms.	8 rooms.	9 rooms.	10 rooms.	12 rooms.
Native born.....	1,072	.....	37	306	409	209	86	16	4	.....	5	.....
Austria.....	488	9	81	91	201	33	7	.....	16	.....	.....	.....
Belgium.....	102	.....	.....	44	30	16	8	4	.....	.....	.....	.....
England.....	993	3	34	226	389	131	123	41	11	20	.....	10
France.....	164	.....	16	69	39	21	14	.....	.....	5	.....	.....
Germany.....	747	.....	59	140	324	125	79	14	6	.....	.....	.....
Hungary.....	823	.....	153	409	216	36	9	.....	.....	.....	.....	.....
Ireland.....	366	.....	14	61	115	73	62	32	6	3	.....	.....
Italy.....	391	.....	28	107	216	25	10	.....	.....	.....	5	.....
Poland.....	573	9	175	160	149	71	.....	4	5	.....	.....	.....
Scotland.....	534	.....	5	115	209	83	61	50	11	.....	.....	.....
Sweden.....	213	.....	16	33	92	68	4	.....	.....	.....	.....	.....
Wales.....	84	.....	.....	14	48	14	.....	8	.....	.....	.....	.....
Others.....	86	.....	24	19	24	19	.....	.....	.....	.....	.....	.....
Totals	6,586	21	642	1,794	2,461	924	468	169	59	28	10	10

Number of Rooms Occupied.

NATIONALITY.	Number of rooms in ten- ements.	NUMBER OF ROOMS IN TENEMENTS OCCUPIED.										
		1 room.	2 rooms.	3 rooms.	4 rooms.	5 rooms.	6 rooms.	7 rooms.	8 rooms.	9 rooms.	10 rooms.	12 rooms.
Native born.....	941	.....	20	198	368	220	96	21	8	.....	10	.....
Austria.....	231	2	23	54	108	25	6	.....	8	.....	.....	.....
Belgium.....	77	.....	.....	30	24	10	6	7	.....	.....	.....	.....
England.....	780	1	16	153	284	125	114	49	8	18	.....	12
France.....	113	.....	8	36	28	20	12	.....	.....	9	.....	.....
Germany.....	537	.....	26	93	236	100	60	14	8	.....	.....	.....
Hungary.....	551	.....	70	273	172	30	6	.....	.....	.....	.....	.....
Ireland.....	296	.....	8	42	76	65	60	28	8	9	.....	.....
Italy.....	199	.....	12	51	100	20	6	.....	.....	.....	10	.....
Poland.....	288	2	60	73	88	45	.....	7	8	.....	.....	.....
Scotland.....	398	.....	2	69	140	75	54	42	16	.....	.....	.....
Sweden.....	175	.....	6	21	76	60	12	.....	.....	.....	.....	.....
Wales.....	63	.....	.....	9	32	15	.....	7	.....	.....	.....	.....
Others.....	60	.....	12	18	20	10	.....	.....	.....	.....	.....	.....
Totals	4,709	5	268	1,125	1,752	820	432	175	64	36	20	12

Dividing the families into two classes, those occupying four rooms and less, and those occupying five rooms and more, it is found that of the former 952 families, or 77.5 of the whole live in tenements having four rooms and less. These families average 5.2 persons each, with 3.3 rooms to a family, and 1.6 persons to each room. Of the families living in tenements having five rooms and over, there is found an average of 6 persons each, and 5.7 rooms to a family, with 1.1 persons to each room.

It is found that 91 per cent. of the families of Austrians, Belgians, Hungarians, Italians and Poles, constituting 33 per cent. of the whole number, live in tenements having four rooms and

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less, with an average of 5.6 persons, and three rooms to each family, and 1.8 persons to each room. These represent 41 per cent. of the foreign born families, 42 per cent. of the persons, and occupy 36 per cent. of the rooms.

RENTS.

The following table gives the number of families living in rented tenements, the number of rooms and the amount of yearly rents paid:

Number of families and rooms occupied, with the amount of yearly rents paid.

RENTS PER ANNUM, LOCALITIES AND NUMBER OF ROOMS.	From \$18 to \$24.	From \$30 to \$39.	From \$40 to \$48.	From \$50 to \$54.	From \$60 to \$66.	From \$72 to \$78.	From \$80 to \$84.	From \$90 to \$96.	From \$100 to \$108.	From \$120 to \$150.	Total number of families.
ALL TOWNS	4	18	97	37	119	234	59	42	26	14	650
BARCLAY.....			4			13	1		1	1	20
Two rooms			4								4
Three rooms.....						13	1		1		15
Twelve rooms										1	1
BLOOMINGTON.....		1	3	2	4	5	2	1		1	19
Two rooms			2		2	1					4
Three rooms.....				2	1	1				1	5
Four rooms.....					1	4	1	1			7
Five rooms.....		1	1				1				3
COALVILLE			3		1		1				5
Two rooms.....			1								1
Three rooms.....			2								2
Four rooms.....					1		1				2
KANGLEY					2	8	2	3		3	18
Two rooms.....					1	3	1				5
Three rooms.....					1	5	1	1			8
Four rooms.....								1		2	3
Five rooms.....								1			1
Eight rooms.....										1	1
LADD.....			2			4	5	2			13
Two rooms.....			2								2
Three rooms.....						4					4
Four rooms.....							5	2			7
LASALLE.....			2		6	12	1	4			25
Two rooms.....					1						1
Three rooms.....			2		2	1					5
Four rooms.....					2	4		2			8
Five rooms.....					1	3		1			5
Six rooms.....						2	1				3
Seven rooms.....						2		1			3

Number of families, rooms occupied and rent paid—Continued.

RENTS PER ANNUM, LOCALITIES AND NUMBER OF ROOMS.	From \$18 to \$24.	From \$25 to \$29.	From \$30 to \$39.	From \$40 to \$49.	From \$50 to \$59.	From \$60 to \$69.	From \$70 to \$79.	From \$80 to \$89.	From \$90 to \$99.	From \$100 to \$109.	From \$110 to \$119.	Total number of families.
MINONK.....	17	5	12	2	.....	.....	.....	.....	.....	36
Two rooms.....	14	2	5	1	.....	.....	.....	.....	.....	22
Three rooms.....	2	3	1	.....	.....	.....	.....	.....	6
Four rooms.....	3	1	2	.....	.....	.....	.....	.....	.....	6
Five rooms.....	2	.....	.....	.....	.....	.....	.....	2
OGLESBY.....	1	4	18	8	12	1	.....	.....	.....	.....	44
Three rooms.....	1	2	17	2	.....	.....	.....	.....	.....	.....	22
Four rooms.....	2	1	3	2	.....	.....	.....	.....	.....	8
Five rooms.....	3	3	.....	.....	.....	.....	.....	6
Six rooms.....	7	1	.....	.....	.....	.....	1
Seven rooms.....	7
PANA.....	2	2	8	4	4	41	21	18	2	.....	.....	102
One room.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2
Two rooms.....	2	6	4	.....	.....	.....	.....	.....	.....	.....	12
Three rooms.....	1	.....	1	14	9	.....	.....	.....	.....	25
Four rooms.....	1	22	9	12	.....	.....	.....	45
Five rooms.....	1	5	3	6	2	.....	.....	17
Six rooms.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1
PERU.....	1	.....	.....	2	1	.....	.....	.....	.....	.....	4
Two rooms.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	2
Three rooms.....	1	.....	.....	.....	.....	.....	1
Four rooms.....	1	.....	.....	.....	.....	.....	.....	1
ROANOKE.....	1	1	7	6	5	2	.....	.....	.....	22
Two rooms.....	1	.....	.....	.....	.....	.....	1
Three rooms.....	1	1	5	3	1	.....	.....	.....	.....	11
Four rooms.....	2	2	3	.....	.....	.....	.....	7
Five rooms.....	1	1	.....	.....	.....	2
Seven rooms.....	1	.....	.....	.....	1
SANDOVAL.....	1	2	11	2	22	6	1	.....	.....	.....	.....	45
Two rooms.....	1	1	1	.....	.....	.....	.....	.....	.....	.....	.....	3
Three rooms.....	9	1	12	.....	.....	.....	.....	.....	.....	22
Four rooms.....	1	1	1	5	4	.....	.....	.....	.....	.....	12
Five rooms.....	5	1	.....	.....	.....	.....	.....	6
Six rooms.....	1	.....	.....	.....	.....	.....	1
Ten rooms.....	1	.....	.....	.....	.....	1
SPRING VALLEY.....	4	16	1	13	96	9	3	.....	8	.....	150
Two rooms.....	3	3	.....	3	23	1	.....	.....	1	.....	6
Three rooms.....	1	9	1	.....	.....	.....	.....	.....	.....	.....	39
Four rooms.....	4	.....	10	68	4	.....	.....	2	.....	88
Five rooms.....	3	3	1	.....	1	.....	8
Six rooms.....	2	.....	.....	.....	4	.....	6
Seven rooms.....	1	1	.....	.....	.....	2
Eight rooms.....	1	.....	.....	.....	1

Number of families, rooms occupied and rent paid—Concluded.

RENTS PER ANNUM, LOCALITIES AND NUMBER OF ROOMS.	From \$18 to \$24.	From \$30 to \$39.	From \$40 to \$49.	From \$50 to \$54.	From \$60 to \$66.	From \$72 to \$78.	From \$80 to \$84.	From \$90 to \$96.	From \$100 to \$108.	From \$120 to \$150.	Total number of families.
STREATOR.....	1	4	25	4	32	11	.....	1	.....	.....	78
Two rooms.....	1	2	3	1	2	.....	.....	.....	.....	.....	9
Three rooms.....	2	15	3	13	1	.....	.....	.....	.....	34
Four rooms.....	7	.....	14	5	.....	.....	.....	.....	26
Five rooms.....	2	3	.....	1	.....	.....	5
Six rooms.....	1	2	.....	.....	.....	.....	3
Eight rooms.....	1	.....	.....	.....	.....	1
TAYLORVILLE.....	1	.....	6	5	10	5	20	1	48
Two rooms.....	1	.....	2	.....	.....	.....	3
Three rooms.....	1	.....	5	5	5	1	.....	.....	17
Four rooms.....	3	3	.....	.....	14
Five rooms.....	7	1	13
Six rooms.....	1	.....	.....	1
WENONA.....	3	.....	.....	.....	12	.....	3	3	.....	21
One room.....	3	.....	.....	.....	.....	.....	.....	.....	.....	3
Two rooms.....	12	.....	1	.....	.....	13
Three rooms.....	2	.....	.....	2
Four rooms.....	3	.....	3

This table gives the record of 650 families who live in rented houses and pay rent to the owners of coal mines; 548, or 84.3 per cent. of them live in houses having 4 rooms or less; of these families, 238 occupy four-room houses, 218 three rooms, 87 two rooms and 5 one room. The average number of rooms to each family is 3.3; the average yearly rent \$66.31, or \$5.53 per month.

A final table is presented giving the number of families with occupations and residences:

Number of Persons, Occupations and Residences.

OCCUPATIONS.	TOWNS.																Totals.
	Barclay.	Bloomington.	Coalville.	Kangley.	Ladd.	LaSalle.	Minonk.	Oglesby.	Pana.	Peru.	Roanoke.	Sandoval.	Spring Valley.	Streator.	Taylorville.	Wenona.	
Totals.....	23	80	40	192	45	143	70	120	271	61	121	120	473	351	100	78	2,288
Blasters.....															39		39
Blacksmiths.....		1				1			2				1		1		6
Cablemen and Grippers.....																	
Cagers.....				2		3		6	3				2		1		3
Carpenters.....								1	1				1		2		3
Drivers.....		2	1	7	1	10	3	15	33	5	1	12	10	14	3	3	99
Engineers.....				1		1		1	3						3		10
Firemen.....				1		1		1	3		1		1	2	1		9
Greasers.....								1	1								2
Helpers.....						5									12		17
Laborers.....	1	4		8	1	4		8	11	3		10	11	37	4		102
Loaders.....						22						57			12		91
Miners, (Hand).....	21	67	35	164	42	66	66	82	230	53	117	34	436	278		75	1,766
Miners, (Machine).....						12									14		26
Mine Managers.....						1			1			2		2	1		7
Spraggers.....		3						2	1				1				7
Timbermen.....			1			7											10
Topmen.....			1			1			1					5	1		11
Tracklayers.....		1		1		2			1		1				3		13
Trappers.....				3	1	2		1	4			1	5	8			25
Water-bailers.....			2	1										1			4
Weighmen.....	1	2		1		2		2				1	3				12
Miscellaneous.....				1		3	1				1			1			7

CONCLUSION.

The aspirations of every thoughtful and prudent American workingman are to provide himself with a pleasant home, not extravagantly furnished, but neat and comfortable; to have himself and family well clothed; to secure for his children the best common school education possible; to make provision for all who may be dependent upon him, and to enjoy as far as possible some of the pleasures of this life. The same may be said of a majority of the workingmen who voluntarily come to this country.

As has been already stated, a class of laborers have been brought to this country through various agencies, who apparently have no such ambitions, and are seemingly content to live under almost any conditions; evidently they care little for the education of their children, preferring rather that they go into the workshop or coal mine at a tender age. These people also seem content to wear the poorest and cheapest of clothing, to live in the poorest houses and subsist on the very coarsest food

and work at any price that may be offered them. There can be no doubt that such a people, when introduced in large numbers into any industry or community, tend to reduce wages and lower the standard of living of the better class of citizens. The result is inevitably the tearing down instead of the building up of the higher civilization of our people.

It is not the purpose of this Bureau to enter objections to persons from any land coming to this country seeking better conditions than they have been able to obtain or enjoy in their native land, but rather, on the other hand, to make manifest, if possible, the evil effects of the dishonest and mistaken policy of importing in large numbers the most undesirable classes of other nations, as laborers, for no other apparent purpose than to bring about a reduction of wages and consequently to subvert the conditions and the standard of industry of the working people of our own country.

THE WORLD'S COLUMBIAN EXPOSITION.

COAL MINING EXHIBITS AT THE WORLD'S COLUMBIAN EXPOSITION.

At a meeting of the Commissioners of the Bureau of Labor Statistics, held September 5, 1893, it was decided to use the opportunity afforded by the World's Columbian Exposition to examine the exhibits pertaining to the mining of coal in the Department of Mines, Mining and Metallurgy, and publish the result of such examination as an appendix to the Coal Report for 1893.

INTRODUCTORY.

Exhibits common to mining, some exclusive to mining, and others closely allied to it, were made. The coal mining exhibit in its technical, experimental and practical features, was in full keeping with that of other industries, and was largely due to the interest manifested by foreign exhibitors.

The relation of the science of geology to practical mining was demonstrated by numerous geological maps and cross sections, vertical and horizontal, of veins and enclosing walls. The means of portraying the position of veins and under-ground workings were very interesting; several model vertical sections of metaliferous mines presented the methods of timbering where the vein had been worked to considerable height. Horizontal sections of a mine and its veins were shown by paintings on glass plates parallel to each other, and at distances apart proportionate to the actual distances in the mine.

The construction of a coal mine in miniature, without any layers above the coal, exhibited the workings also the timbering and other modes of supporting the roof, all serving admirably to illustrate special systems of mining. These were also further illustrated by maps and plats of mines.

The development that electricity has brought about in mining operations was demonstrated in its entirety. Machinery, operated by electricity, for cutting, drilling, transportation and other purposes to which it is applied in mines, was exhibited by the General Electric Company. Other exhibitors displayed electrical cutting and drilling machinery. Several portable incandescent lamps were also exhibited. The application of compressed air to the operating of drilling and coal-cutting machines, underground, was shown in the large exhibit of high grade compressors. In techno-experimental exhibits, the model of the trial-drift of the Prussian fire-damp commission was pre-éminent. The knowledge derived from the results of the experiments made, wherever applied, will materially add to the safety of blasting operations in conditions peculiar to the dry and confined chambers of coal mines.

The advanced mining practices of Germany were shown by numerous models of plants, special machinery, hygienic and experimental appliances, and systems of mine workings exhibited in this section. It is apparently a part of the practice of that country to make a model of every important construction and of each principal system used in working its mines, so that, whenever desired, it can show to advantage the high position occupied in the mining industry.

The relation that a corporation, in addition to its material and financial interests, can extend and sustain to the social welfare of its employés, was shown by charts of the societies, and group photographs of their members, under the patronage of the Douehy Coal Mining Society.

The opportunity that a universal exposition affords a single firm to bring to view its position in an industry and to acquaint the public with its products was well utilized by the H. C. Frick Coke Company, Connellsville, Pa. The exhibit of this concern consisted of working models of surface plants, maps and photographs of mine working, a coke pyramid, and a full section of the seam of coal from which the coke is made. Descriptive circulars presented half-tone illustrations of the underground workings of a coal mine, and also coal mine and coke surface plants, which gave a general idea of coal mining and coke burning.

A detaching hook and a working model of the same were exhibited by the Farnley Iron Works, Leeds, England. The hook and attachments were a fine representation of how a single piece of mechanism, being only a part of a large construction, may be shown to advantage when the whole structure and the conditions under which it is to operate cannot be exhibited.

The exhibits of American coal-cutting machinery was in a degree complete; the proprietors of the Harrison machine applied for space to exhibit an air-compressor and cutting machine in operation, the space allotted, however, was insufficient, so no exhibit was made.

Exhibitors of electrical mining appliances were requested to furnish for this article a technical description of the special features of each type of apparatus exhibited; those received, however, were chiefly more descriptive of the work that the appliances were designed to do, than of the special features by which the motive power is produced, distributed or controlled. As it was near the close of the exposition when this subject was taken up, the engagement of expert service to properly describe the technic construction of these appliances was precluded.

In the French section were the exhibits of the Douchy, Courriers and Albi coal mining companies. Their exhibits consisted in part, of a geological map of France, maps of coal-fields of the Nord and Pas-de-Calais, also maps of the properties owned by these companies, showing the location of the mines, railroads and canals. They also exhibited diagrams showing the amount of coal produced, number of persons employed underground and on the surface, the amount of wages paid in the coal mines in that country from 1853 to 1892; the comparative number of accidents at mines in France, Great Britain, Belgium and Prussia, during the four periods, 1852-1860, 1861-1870, 1871-1880, 1881-1888; the amount of coal produced in the United States, Great Britain, Germany and France, from 1880 to 1891, and the relative increase of the production, wages and dividends, in the Pas-de-Calais mines from 1870 to 1890. A table was exhibited showing the salaries and earnings of all employés in and about the mines in France.

The Douchy Coal Mining Society exhibited the drawings of a vertical section of the plicated seams of its St. Mathieu mine,

with plans, elevations and sections of the buildings, hoisting engines, screen-houses, also of the Rateau ventilator at its Schneider mine. The capacity of the latter mine is one thousand tons per day from a depth of two thousand six hundred feet. There were also exhibited drawings of the parks, houses and model boarding-houses, provided by this society for its workmen. Also diagrams, showing the coal and coke production of the society from 1836 to 1892, and the coal production and average wages per man for under-ground work from 1870 to 1890. The society also displayed a list of the names, ages and occupations of two hundred and eighty-five workmen who had been more than thirty years in its employ, with charts giving the names of sixteen workingmen's societies and their officers under the patronage of this company.

The H. C. Frick Coke Co., Connellsville, Pa., displayed a lithographic and a relief map of the Connellsville Coke region, on a horizontal scale of 1 to 19,200; showing the location of towns, farm-houses, rivers, railroads, mines and coke ovens, of the entire region. The lithographic map showed contour lines ten feet apart, with a number of columnar sections and geological cross sections, from the surface to the stratum below the coal. The work was minute, extensive and artistic, and is probably the most complete topographical and geographical map ever made of such an extensive area by a private corporation. When it is considered that a large part of the mining rights, and a large proportion of the coke ovens of the region, are owned by this company, the use of the maps and value of the facts obtained during their construction are readily seen. From the known position of the vein and the elevations of the surface, at different points, the unknown position and inclination of the vein, beneath other known points and elevations on the surface may be approximated. From the contour lines the shortest route to reach a point by a siding of limited grade may also be determined.

Large geological maps and sections of the coal-fields of different countries were exhibited by the several governments. Some of the best were of Westphalia and New South Wales.

METHODS OF MINE WORKING.

In the German section was a model of working a light pitching seam, 1.8 meters thick, by long-wall. The seam is developed by a slope from which levels are driven each way. The levels are divided into panels by headings driven up the pitch at regular distances apart. A stope, 12 meters wide, is taken both ways from the upper side of the lower level and when these stopes have advanced a few meters parallel with the level, another stope is started; this is repeated until the upper level is reached. Whilst a panel is being exhausted, both levels are driven and another panel prepared.

Tracks are laid in the headings and along the upper boundary of each stope and the track in each stope is used for the purpose of bringing the debris and timber to support the roof of the stope below; it is also used to take away the coal from the stope above. The roof is supported by timber-cribs and mine debris which is conveyed on an inclined plane in the headings to the track in each stope; the coal is conveyed down the inclined plane to the lower level. The empty cars are hoisted up the inclined plane to the track of the stopes by a counter-weight that runs on a track beneath the car.

The H. C. Frick Coke Company exhibited a map of the workings of its Leiseuring No. 3 mine. The general plan of this mine is four main face entries on each side of the hoisting shaft, the two outer being intake air-courses, and the two inner return air-courses to the hoisting shaft, which is the upcast. The entries are driven in a block of coal 500 feet wide; the chain-pillar between the two inner entries is 60 feet wide; the pillars between the outer and inner entries are 150 feet wide. Three main butt entries are driven from the face entries. Entries parallel to the main face entries, that are intersected by the main butt entries, divide the mine into working panels. Swamp butt entries, which do not extend beyond the panels in which they originate, are driven as the undulations of the sub-stratum necessitate. The entries of each panel are completed before the rooms are commenced; the rooms are driven 12 feet wide, with 36 feet of pillar between; the pillars are afterwards recovered.

After a panel is opened, it is worked room-and-pillar with-drawing.

The down-cast shaft is located near one of the intake air-courses; the air is divided into four main splits near the bottom of the down-cast; two over-casts conduct the air to the other intake air-course, the large number of air-ways being for the purpose of passing an abundant volume of air through the mine with small frictional resistance. Two hundred thousand cubic feet of air per minute is the quantity reported as passing through this mine, with a water-gauge of three-tenths of an inch at the commencement of each split near the bottom of the down-cast shaft, and with one inch of water-gauge between the top of the down-cast shaft and the entrance to the fan.

In the German section a model of a plant of the Kind-Chandron method of sinking through water-bearing strata was exhibited. It consists of a strong wooden tower to which four rods threaded at the upper end are attached, which hold in place and control the movement of a large circular tube, consisting of internally flanged iron rings, without vertical joints, that are bolted together. A layer of sheet lead is placed between each joint to make it water-tight. The bottom flange of the lower two rings projects outward; the upper flange projects inward. The upper rings slide over the lower, the movement being controlled by long bolts connected to the inner flanges. The annular space between the outer flanges is interlaced with a netting and filled with moss to shut off the water at the bottom when the tube is permanently placed. When lowering the tube much of its weight is balanced by filling it with water to a removable diaphragm that has a small tube extending upward. This small tube is filled to such height that the upward pressure of the water against the diaphragm relieves the strain on the suspending rods.

If the material through which the tube is passing requires to be loosened, a large cutting tool which moves vertically and revolves on an axis, loosens for a certain depth the central portion of the shaft; a similar tool of larger radius, but without cutting chisels at the center, loosens the remaining part. The earth is removed with kibbles, and by a tool resembling a large sand-pump, having at the bottom a double valve

hinged to a diametral rod. The cutting tools when not in use are suspended on trucks that run on a track at the upper part of the frame, and can be moved into position for work when required. Sheaves are placed at convenient places on the frame to facilitate the operation of the different tools.

SURFACE PLANTS.

TOWERS AND BUILDINGS.

The H. C. Frick Coke Company exhibited two models. One was of its Standard mine, with a line of bee-hive coke ovens in operation, together with several workmen's dwelling houses. These houses are double frame, two stories, and painted with dark red mineral paint.

The tower of this mine is constructed of wood. The output of the mine, as well as of all the other mines in this region, is made into coke. The coal is intentionally made small in mining, and dumped from the mine-cars into a large bunker. From this it is taken in cars having hopper-shaped beds, holding four tons each. The cars run on a track between the ovens, and are hauled by a small locomotive. The ovens are built in solid double rows, and are charged by lowering a chute at the side of the car.

The other model was of its Leiseuring No. 2 mine. The tower of this mine is constructed of steel, having six columns and three braces. The hoisting engines of both mines are first motion, and have conical drums.

TIPPLE AND MINE-CAR.

The Barker Mine-Car Manufacturing Company, Springfield, Ill., exhibited models of a rotary tippie, and of a mine-car. The tippie consists of a wrought iron frame curved upwards at the end, and bolted to two large sprocket-wheels, resting on an inclined track adapted to the wheels. When the loaded car reaches the front end of the tippie, the center of gravity of the car being below and forward of the axis of the two sprocket-wheels, causes them to roll forward and up the inclined track, and at

the same time turning the car over and dumping the coal into the chute. As the contents of the car are dumped, the center of gravity of the car and frame continually changes, so that when the car is emptied, the sprocket-wheels roll down the inclined track, bringing the car back and delivering it off the tippie. The car has chambered, self-oiling wheels, and an I beam frame at bottom, to which the axles, bottom of bed and binders are bolted.

COAL CLEANING.

The Consolidated Coal Company of St. Louis, Mo., owning and operating mines in Illinois, exhibited the working model of a tower and coal-cleaning plant. The coal is dumped into a hopper, from which it passes through a swinging door on to a shaking screen that is inclined at a light angle from the tippie. The screen is suspended by iron rods to stringers laid on the bents of the tippie house. Motion is imparted to the screen by connecting rods from eccentrics on a revolving shaft. The bottom of the screen is laid with perforated steel plates, and the swinging door regulates the amount of coal passing to the screen. At the end of the screen there is a horizontal picking-table. This table is an endless conveyor that passes over sprocket-wheels. The coal is carried on the table to a short bar-screen, over which it descends, by gravity, to the railroad cars.

The model of a plant at Louisenthal, Germany, for separating and washing small coal, was exhibited in the German section. The small coal, from 0 to 80 mm. in size, is conveyed from a hopper to a revolving screen having five sections of wire cloth of different sizes. The coal of 15 to 80 mm. is separated into four sizes, and conducted dry through pipes to four jiggers, in which they are washed, and then carried with the water to draining screens, from whence the coal is conveyed to bunkers. The coal, from 5 to 15 mm. is conveyed from the revolving screen 1.70 m. above the jiggers to a tank, where it is agitated with water and conducted by iron pipes to three jiggers, where it is washed in separating pans and conducted to a draining screen of 5 mm. mesh.

In case the coal of 0 to 5 mm. is washed, it falls with the water that flows from the jiggers and that which leaves the separating pans and draining screens, and is conducted into

funnel shaped tanks which are filled with water. For draining the fine coal there are two perpendicular perforated wrought iron pipes of 40 mm. diameter in each tank, having a valve at the lower end through which the water in the coal passes into a reservoir in the cellar. The coal is drawn off into wagons through a door at the bottom of each tank, the turbid water overflowing from the tanks passes into other tanks where the impurities settle to the bottom of the still water and the impurities pass to the cellar and are pumped to the dumping-ground. The clear water is pumped to the washers and again used. For washing this fine coal there are three systems, each having eight tanks, which are filled alternately, so that while in one system the coal is being washed, in the second it is being dried, while in the third it is being taken away.

The impurities that are separated from the coal in jigging, as well as others, go to the deepest part of the separating pans and are removed from the coal at this stage of the process, and conveyed to the dumping-ground. The plant is designed for washing 70 to 80 tons of coal of sizes from 0 to 80 mm. per hour and uses 450 to 500 cubic meters of water per hour.

BY-PRODUCTS OF COAL.

In the German section was exhibited the model of a plant for the manufacture of briquettes from coal dust. There were also exhibits of briquettes, two in the German and one in the English sections. Another exhibit was by Huetteman & Spiecker, which claimed special attention, the cementing material being rosin instead of tar or asphaltum.

There was an exhibit of brown coal and the following products obtained therefrom: Asphaltum, tar, lubricating oil, gas-oil, paraffine, creosote, benzine, benzoline, collodin, picolin, naphthalin, carbolic acid, ammonium sulphate, orthokresol and sulphur.

SAFETY, RELIEF AND HYGIENIC APPLIANCES.

DETACHING HOOK.

The Farnley Iron Works, Leeds, England, exhibited a detaching hook and working model of the same. This hook consists of four plates, loosely bolted together near the center, and held

in place by a copper pin which passes through them; a bolt passes through a clevis that is attached to the socket at the end of the rope, and is released from the detaching hook when the plates spread apart. Should an overwinding occur the upper part of the hook will pass through the horizontal suspending plate which is attached to the tower near the sheave; the lower projecting part of the hook will strike this plate and cause two of the plates of the hook to shear the copper pin.

A projection on the upper part of two of the plates, will extend beyond the horizontal plate and suspend the cage.

The cage is released by passing a bolt through four holes in the hook, that are now in line with each other, and attaching a long clevis to the bolt. The cage is then raised and supported by the two outside plates; the inside plates are forced back to position, and the hook lowered through the horizontal suspending plate. When the cage reaches the stops, the short clevis at the end of the rope is returned to its place in the hook, and all the plates brought back to their original position; the copper rod is then passed through the small holes in the plates and riveted.

CAGE EQUIPMENTS.

In the German section there was a model of the steel tower and cage equipments of the Empress Louise mine of that country. The hoisting rope is connected to a split socket by four bands, a bolt through each band presses a plate against the rope, a detaching hook is connected to the socket, and a clevis to the lower part of the detaching hook. To the clevis an eye-bolt is connected, the lower end of which passes through the center of a horizontal plate. Two smaller eye-bolts pass through this plate to a vertical plate; the small eye-bolts are for the purpose of adjusting the cage so that it will hang perpendicular. Two side-rods connect the vertical plate with the safety-catches and frame-work of the cage. The safety-catches are long plates with toothed surfaces, which engage the sides of the guides, and are operated by spiral springs placed in tubes on the sides of the cage.

The cage is constructed of steel, and lined with thin, perforated plates. Doors of the same material swing outward on vertical

axes. These equipments are designed for preventing accidents by overwinding, breaking of ropes and falling during transit.

AMBULANCE.

The Empress Louise mine also exhibited the model of a mine ambulance. It consists of a truck gauged to run on the mine track. The axles of the truck are farther apart than those of an ordinary pit-car. Above each axle two carriage springs are placed longitudinally. The bed-frame is about six and a-half feet long, constructed of angle-bars, and rises about one-third of its length towards the head. This part has a folding top or hood, made similar to the ordinary buggy top, and covered with a dull glazed canvas. A strong canvas extends the entire length of the frame, and forms the bed. A large pillow is placed at the upper end, extending downward, to support the injured person in a reclining position. A canvas cover is fastened at the bottom of the frame, and extends up and back, where it is fastened by buckles to the hood and sides. Four movable handles are provided for the frame, by which the bed may be lifted from the truck and carried in the mine or on the surface.

SAFETY-LAMPS.

The Colliery Engineer Company, Scranton, Pa., exhibited a collection of safety-lamps. Every type of gauze, and gauze and glass-protected lamps, seemingly of every make and of every period that could be obtained, was in this display. There were also two portable incandescent lamps. Awards were given to the exhibit for its educational and evolutionary merits. Awards were also given to the Evan Thomas No. 7, Bonnetted-Mueseler, Ashworth-Hepplewhite-Grey, Marsaut, and the Dix port-hole lamps.

In the French section, the Chesneau fire-damp detector and the Fumat safety-lamp were exhibited. The Chesneau fire-damp detector is an alcohol lamp; the top of the flame inside of the gauze is visible through a mica plate, on which is a graduated scale. Small percentages of fire-damp can be detected by the elongation of the flame. The Fumat lamp is constructed so that the air for combustion enters below the flame. It is self-extinguishing in an explosive mixture of fire-damp and air.

The H. C. Frick Coke Company exhibited the Davy as its testing lamp, and the Clanny and bonnetted Clanny as its working lamps.

GAS TESTING MACHINES.

Thomas Shaw, M. E., Philadelphia, Pa., exhibited a machine for determining the igniting and explosive points of mixtures, of inflammable gas and air, and the amount of carbonic acid present in mixed gases. The machine consists of two vertical cylinders, open at the upper end, and provided with pistons that are attached to a graduated beam; the larger or outer cylinder is stationary, the smaller or inner cylinder is movable along two bars, one of which is graduated. The piston of each cylinder is connected to a graduated beam and the indices of the smaller cylinder and piston are set alike on the bar and beam. The contents of each cylinder are discharged through one injector into a horizontal cylinder and the mixture of gases leaving this cylinder is projected through a small pipe across the flame of an alcohol lamp. A gong is placed in line with the cylinder and is struck by a ball on the piston-head when an explosion occurs in the cylinder, and a spring is attached to the piston to bring it back to its original position.

In operation, the beam, connected with the piston-rods of the vertical cylinders, is moved by a hand crank. The outer cylinder, underneath the piston, is opened to the atmosphere or connected with a bag containing gases of known mixture, according to whether the sample contains a high or low percentage of explosive gas; the bag containing the unknown mixture is connected with the smaller cylinder. The igniting point is determined by the action of the mixtures on the flame, and the explosive point by the explosion which occurs within the horizontal cylinder, and causes the gong to ring; the small cylinder is moved along the graduated bars until these points are determined.

When determining the percentage of carbonic acid in an atmosphere, the smaller cylinder is placed at zero of the graduated beam and bar, so that there is no movement of its piston; the large cylinder is pumped full from the bag containing the gas by slowly moving the crank; the gas is then passed through a test tube containing one ounce of a saturated

solution of calcium hydrate until the degree of turbidity corresponds with that of a sealed tube containing the same amount of calcium hydrate through which a known quantity of carbonic acid has been passed. The volume of the sample passed through the solution is measured by a graduated rod attached to the large cylinder.

TRIAL-DRIFT.

The Prussian state mines of Saarbrucken exhibited a model of the trial-drift at the König mine near Neunkirchen. In this drift the experiments were made by the Prussian fire-damp commission to determine the action of explosives in the presence of coal dust and explosive gas. The model will be best understood by giving the description of the drift taken from a pamphlet furnished by that government:

"In the trial-drift experiments are made relative to the blasting in fire-damp mines, or mines with dangerous coal dust, to show the inflammation of mine-gas and coal dust by explosive agents. The works consist of the trial-drift, the gasometer for the mine-gas, the trestle for the observation of the results and the security dams.

"The trial-drift imitates, so much as possible, the condition of the mine. It is built elliptic, with a small inclination towards the entrance, 12 m. long, 1.70 m. high, and 1.20 m. wide, has an open entrance, and is closed at the end by a mured dam, in which the drift is enchased 30 c. m. deep, to close it better. It is made of oaken planks 5 c. m. thick; these are joined by channel and feather, and are held together by 22 rings of I iron, the joints are stopped by stemming with oakum and mastic of red lead.

"The lower half of the drift, as well as the left face, are enchased entirely into an old dumping-ground, whilst the crown and the upper half of the right face are free. In the latter there are ten windows, whose lower brim is 1.30 m. above the level of the gang-way. The middle of the first window is 1.20 m. from the head, the second 0.57 m. from the first; the next two windows follow in the same, the others in greater distances. The panes consist of polished mirror glass, 20 mm. thickness, 250 mm. height, and 120 mm. breadth. They are screwed in iron frames, with enclosures of rubber.

"In the mured block a steel mortar is lodged on the level of the drift. It consists of a kernel of 165 mm., and a mantle of 495 mm. total diameter, and weighs 1,075 kg. The bore in the middle of the kernel is 460 mm. deep, and 55 mm. in diameter. The diameter of 55 mm. is chosen for the bore, so, that by using wide water sacks or other castings, it can yet be shot. In order to save the mortar from damage, the diameter is generally narrowed, whereby the charge distributes itself upon a greater length of bore. For this purpose, the explosives are brought into the bore

of the mortar in a case of dry and firm beech wood of 53 mm. exterior, and 33.5 mm. interior, diameter, 440 mm. depth, and a bottom thickness of 20 mm. The bottom end of the wood case is rounded according to a model corresponding to the rounding of the mortar-bore. The experiments have shown that, by using these wood cases, there is no influence upon the result compared to the discharging without the cases. Behind the mortar there are rubber plates, which take the recoil upon themselves. The middle of the bore is 33 c. m. above the level of the drift. The axis of the bore cuts the axis of the drift at a distance of 5 m. from the mured block. This position is chosen because the shots, taking up the coal dust from the ground, are so specially dangerous. In case the mortar be placed higher, the timbering of the drift would suffer too much. A charge of not more than 250 gr. should be given out of the steel mortar. The mured block, which is made of bricks and cement, has a length of 2.25 m.; its height above the crown of the drift is 1.20 m.; breadth on every side of the drift, in three-fourths of the height, is 1.15 m.; from here it diminishes upwards to 1.28 m. total breadth. Four perpendicular and four horizontal anchors pass through the mured block.

"In order to warm the trial-drift, a steel coil is placed on the face at the mured dam. So that the damps can go off quickly, a conduit of pipes enter the drift through the mured block, through which, from the outside, compressed air can go in. The entrance of the fire-damp out of the gasometer is close to the level of the drift at the right face, where also the metal buttons for the electric priming are placed in height of the windows. Above the first window there is, in the crown of the drift, a man-hole, which is opened during the preparation of the shots. Above the third and fifth windows, openings of 20 c. m. diameter are placed in the top heading, which close from the outside by wood stoppers fastened to a chain, and also serve as safety-valves.

"A chamber of 10 c. b. m. is divided by a wooden ring, fastened to the timbering of the drift; this is closed during the experiments with fire-damp, by means of a rubber sail-cloth; to close better, an equal closure is placed 1 m. before this closure in direction of the drift-mouth. The sail-cloth is nailed so that it can be lifted and one can creep beneath it. The fire-damps are let in from the gasometer in the gas-chamber; a workman effects the mixture of the fire-damps with the air by waiving with a piece of cloth; on the gasometer there is a water-mark, which indicates the sinking whilst the gas is let into the drift, by which the percentage of methene in the gas-chamber can easily be calculated.

The entering fire-damps come from a blower which is situated in the mine; the control of the gas percentage is done by analysis of the blower, gasometer and drift-gas. In order to see if the drift-gas is explosive, a trial-pipe of Lohmann is used with an apparatus for letting an electric spark go over, so that a temporary control can be made immediately in the same place, by means of hanging the trial-pipe to the wires of the electric apparatus for lighting. The coal dust from the ratters of the

mine is strewed in great quantities upon the bottom of the drift and is whirled up with a broom by the mentioned worker before leaving the drift.

"The windows are observed from a trestle, which is placed so that all windows can be reviewed by one person; on this trestle the apparatus for lighting of Bornhard is also placed. The shots of the mortar represent blowing shots; such shots without any stemming are especially dangerous and therefore very appropriate for comparing experiments, notwithstanding they rarely appear. According to the examinations of Lohmann only those are to be considered explosives of security, which when used for such shots, do not catch fire when at least 100 gr. are used. Gelatinized nitro-glycerine, general-guhr and gelatine-dynamite do not satisfy this condition, but the dynamite which can be used in fire-damps, or explosives of security from the group of explosives of Sprengel, as Sekurite, Roburite, explosive Favier, and Westphalite fulfill this condition."

MEANS TO ALLAY AND PREVENT COAL DUST.

In the German section, models of the appliances used to allay and prevent coal dust in the state mines at Saarbrucken were exhibited. The following description is furnished:

"Coal dust has shown itself as a very dangerous enemy of the miner, attempts to suppress it have been made for a long time. In several very dry, fat coal mines of deeper level near Saarbrucken, two methods to remove the danger of coal dust are used.

"The first method consists in artificial sprinkling of the already formed dust. For this purpose a far ramified supply of water for sprinkling is established throughout the whole mine, beginning at the receiver which is placed below ground and directs the water by conduits which follow to the different roadways and working places with a pressure of ten to twenty atmospheres. Hydrants are placed along the entries about 50 m. apart to which the hose is attached. The coal dust is wet by aid of valves, hose and hose pipes, so that it is not inflammable and cannot take explosions into vicinal layers; the removal of the coal dust also prevents diseases of the respiratory organs, for example the so-called 'coal lungs.'

"The second method is to prevent the formation of coal dust as much as possible. It consists of a proceeding invented by Meissner, royal councillor of mines at Berlin, in which the dust at the moment of formation is sprinkled within the coal. The fine dust originates in greater quantities in the wide working faces, consequent upon the greater pressure of the ground in these places than in small gangways, therefore, the method of Meissner is principally used at the wide working faces. For this purpose, according to local circumstances, one to three holes are bored about 1 m. deep; this is done in the evening before the shift is finished; into every hole a wooden stopper is driven which encloses an iron pipe connected with a hose; every existing leak is stopped with wedges and plastic clay; the hose pipes are joined together and to the conduit. Before

leaving, the workmen open the valve so that the water enters the bore-holes with great pressure and distributes itself into the coal face; after eight hours the coal is soaked so that there is no dust at the time of getting it down.

"It is evident that in soft and loose coal the result is greatest; this method, however, cannot be employed where the coal is intermingled with clefts, as the water that is pressed in runs out through the crevices. When the floor is disposed to swell the wetting is done moderately or not at all; the water pressure often loosens the coal and facilitates the working."

MACHINERY.

HAULING ENGINES.

The Nelsonville Foundry and Machine Company, Nelsonville, Ohio, exhibited a tail-rope haulage engine, geared six to one, with cylinders 11" x 16". There are two drums of 5' diameter, each will hold two and a half miles of $\frac{7}{8}$ " rope, they are loose on the shaft; a steam piston presses a friction clutch against the inside of either drum when required to bring the drum into operation.

Messrs. Webster, Camp & Lane, Akron, Ohio, exhibited a direct acting haulage plant, consisting of a pair of 20" x 32" balanced slide-valve engines, and two drums fitted with friction clutches. Each drum is five feet in diameter, three feet wide, with flanges fourteen inches high, and holds 8,500 feet of $\frac{7}{8}$ " rope. The friction clutches are operated by steam and can be so set that if the trip leaves the track or meets with an obstruction the clutch will slip; each drum is also controlled by a band brake. The steam pipes are underneath the cylinders, and the levers are set high so that the engineer can see over the drums to the mouth of the drift or slope.

AIR-COMPRESSORS.

The Rand Drill Company, New York City, exhibited a compound duplex compressor. The high pressure steam and air cylinders are each 22" in diameter, and the low pressure steam and air cylinders are 34" and 40" diameter, respectively; length of stroke common to all, is 48 inches. The high-pressure cylinders are in a direct line, and the low-pressure cylinders are similarly placed. The engine is of the Corliss compound condensing type. The valves of the steam cylinders are operated by eccentrics on a fly-wheel shaft; the valves of the air cylinders are

operated mechanically, being fully opened at the commencement and closed at the end of the stroke, without the vibrating movement common to valves of the spring, poppet type. A cooling receiver is placed between the low and high pressure air cylinders, into which the air enters from the low pressure, and goes to the high pressure cylinder.

The Ingersoll-Sergeant Rock Drill Company, New York City, exhibited a direct-acting piston inlet-compressor. The steam cylinder is placed between the fly-wheel shaft and the air cylinder. Connecting rods from each end of a cross-head, between the steam and air cylinders, operate two fly-wheels, placed one at each side of the engine bed. Eccentrics on the fly-wheel shaft operate rocker arms, to which the slide-valve stems are attached. The air passes through a tube to the hollow piston of the air cylinder. The inlet valves are two flanged rings, one in each face of the piston, and have a short throw; they are opened and closed alternately by their own inertia.

The Norwalk Iron Works Company, South Norwalk, Conn., exhibited a compressor that consisted of an engine and compound air-compressing cylinders placed in a straight line on the bed-plate. Two double rods, connected to a cross-head between the compressing cylinders, operate two fly-wheels, one placed on each side of the bed-plate. The fly-wheel shaft is located between the high-pressure cylinder and the steam-engine. Eccentrics on the fly-wheel shaft operate rocker arms that connect with the slide valve; the slide valve has a cut-off that is adjusted by a right and left screw, which is set by a hand-wheel. Part of the inside face of one fly-wheel has oblique teeth for receiving pawls, to prevent backward creeping when the compressor is stopped. A drag crank is attached to the fly-wheel shaft, which, by means of a connecting rod, operates Corliss valves, through which the air enters and leaves the low-pressure cylinder. The air, in passing from the low to the high-pressure cylinder, goes through a cooling tube containing a number of small pipes, through which a stream of water constantly flows.

COAL-CUTTING MACHINES.

The Sullivan Machinery Company, Chicago, Ill., exhibited the Stanley Header. This machine is designed for cutting an annular channel in coal four to six feet in diameter, five inches wide

and two and a-half feet deep, at the same time boring a hole in the center of the channeled block. The machine has a cross-head four to six feet long, connected at the center to a revolving shaft. Arms two and a-half feet long, to which small cutting tools are fastened, are bolted at right angles to the cross-head. As the cutting part revolves, it is fed forward by a screw-feed at the rear of the shaft, which is regulated by a split nut and clutch, controlled by the operator. High-speed gearing is provided for returning the cutting-arms from the channel. The motor is a pair of reciprocating, compressed air-engines, with center crank connections. The machine is held in position by jacks at the top and sides of the entry. Two cuts are made each time that the machine is set. After each channel is completed, the coal is blasted by charging the hole in the center.

The Jeffrey Manufacturing Company, Columbus, Ohio, exhibited two of its mining machines, one operated by an electric motor, the other by compressed air-engines. The machines have two frames. The top part of the lower frame has a rack with the teeth downward and underneath. In this frame is an upper frame, carrying a revolving cutter-bar at the front end; small cutting tools are fastened by set-screws, and inserted in the cutter bar; this bar is revolved by endless sprocket-chains with curved links; smaller chains run parallel with these, and remove the cuttings. The motors are attached to the upper frame, and move with it as the cutting advances. The feed is effected by a pinion wheel, that engages with the rack of the lower frame. Jacks, operated by a hand-wheel, for fastening the lower frame to the coal at the front and to the roof at the back, are connected to the machines. The machines are so geared that the feed-bar revolves slowly when cutting the coal, and rapidly when returning the cutter-bar from the undercut. Provision is made with the electric machine for using the power to load it, and move the truck along entries where there are open wires.

The Sullivan Machinery Company, Chicago, Illinois, exhibited the Stine-Smith mining machine. This machine is operated by compressed air, has a rotary cutter-bar at the front end that revolves upward, and, it is claimed, prevents climbing of the cutter-bar. The cutter-bar is connected by toothed gearing to a horizontal shaft operated by a screw feed-bar, as the undercut is made.

The Mitchell Longwall Mining Machine was exhibited by the Sullivan Machinery Company, Chicago, Illinois. It consists of a pair of compressed air-engines 6"x8", operating, by toothed-wheel gearing from the crank-shaft, a rotary cutting-bar that projects from the side of the machine. The cutter-bar is 3' 6" long, and is 4 $\frac{1}{4}$ " in diameter at the machine, tapering to 2" at the end. Cutting bits are fastened in the bar by set-screws. An endless sprocket chain, furnished with scrapers for removing the cuttings, is placed parallel to and near the cutting-bar. The machine is provided with two hundred feet of cable, wound on a drum. In operating, one end of the cable is attached to a prop set along the working face in advance of the machine, and is drawn to the work by a friction clutch controlled by the operator. The machine is mounted on an iron skid, one end of which is bent upward to facilitate its movement along the floor.

Samuel S. Brown, Pittsburg, Pa., exhibited the Sam Brown Mining Machine. It consists of a frame held in position by four jacks, one at each corner of the machine, and an upper frame, which is advanced and withdrawn by a screw feed-bar. The cutter consists of an endless sprocket chain in which cutting bits are inserted and held in place by set screws. The chain runs in a horizontal plane around sprocket and guide-wheels set in the upper frame. In operating, the front of the machine is set parallel to the face of the coal. In the back part of this frame is a right and left screw for adjusting a guide-wheel which takes up the slack of the chain. The machine is operated by an electric motor connected with the upper frame and moves with it as the undercut is made or as the frame is withdrawn.

The Ingersoll-Sergeant Rock Drill Co., New York City, exhibited a coal-cutting machine operated by compressed air. It consists of a horizontal reciprocating engine, mounted and balanced on two wheels, and furnished with handles to aid the operator in directing the blow. The projectile consists of the piston, and piston-rod combined, to which a socket is keyed, a pick having a beveled V point is keyed to the socket. The machine is provided with valves for giving a reciprocating motion to the piston, and for adjusting the length and force of the blow; buffers and springs placed in a counter-bored air-chamber, at each end of the cylinder, cushions the cylinder

heads. The front cylinder head has an extension, in the end of which a grooved bushing is bolted; the piston-rod for part of its length is corrugated to fit the grooves of the bushing, direct the blow in a straight line, and keep the points of the pick in a vertical position. In operating, the machine is placed on a wooden platform about three feet wide, at right angles to, and inclined to the face of the coal; an undercut is made to the required depth, the platform is then set for another undercut. The operator sits on the platform back of the machine, and directs each blow by the handles. The rebound of the machine is checked by the inclination of the platform, and the pressure exerted by the operator with his foot against a wooden block behind one of the wheels.

The General Electric Company, Chicago, Illinois, exhibited an electric percussion mining machine. This is a rotary motor and gearing mounted on wheels. The projectile is drawn up against a coiled spring; the compression of the spring produces the blow when the projectile is liberated; a socket and pick are keyed to the end of the projectile. The manner of operating is by placing the machine on an inclined platform, guiding the blow by handles, and checking the rebound with a foot block.

The Peoria Coal Drill Works, Peoria, Illinois, exhibited the Wantling & Johnson Coal-Cutting Machine. This machine is operated by compressed air, and designed for making a vertical cut; it is mounted on a truck which runs on the mine track. A rotary engine operates a shaft that passes through a hollow square bar; this shaft operates two cutting wheels placed near each other, that revolve in opposite directions to prevent climbing; small cutting tools are inserted in the wheels at the front and sides. The machine is balanced on the truck and has a horizontal and vertical range of about 90 degrees, so that the cutting wheels can be raised, lowered, or directed to either side. The hollow square bar passes through, and is supported by an arm, that is attached to an iron column fastened to the roof and bottom by a bar jack. The arm is raised or lowered by a handle that operates a bevel-wheel gearing connected with a screw bar. The cutting wheels are fed forward by a screw-bar having a friction clutch, and can be lightly inclined toward

each other, so that the cutting will be of less width at the back than at the front.

ROTARY POWER DRILLS.

The Jeffrey Manufacturing Company, Columbus, Ohio, exhibited an electric power drill. It has a small motor hung in an upright column, to which is geared an auger having a screw feed-bar and hinged nut. The column is fastened to the roof and bottom by wheel-jacks and braced from the center of the column to the mine floor. The same firm exhibited a drill operated by a rotary engine, driven by compressed air. The auger is attached to the end of a smooth piston-bar which moves in a cylindrical tube. The feed is effected by admitting compressed air at the end of the tube back of the piston-bar. When the hole is drilled the length of the auger, the air in the feed cylinder is exhausted, and the bar moved back. The advantage of a pressure over a positive feed in pyritiferous coal is apparent.

CONCLUSION.

The fact that Illinois is the second coal producing State in the Union, and that its coal is mined and marketed at a less cost than in any other part of the world, suggests the thought that, in some particulars, our mining practices have pre-eminence, and that our mines must possess some exceptional natural advantages not obtained elsewhere. It would certainly be interesting to all engaged in mining, to learn how this position has been attained, and with what degree of care or abandon our coal-fields are worked; also, under what conditions our mining operations are conducted.

Considering that the World's Columbian Exposition was held within our State, certainly a State pride and courtesy due to other states and countries, should have prompted to thorough efforts for an exhibit of coal mining appliances, utilized in our mining places, that would have been equal in some particulars, if not superior, to that of any other exhibition. Instead, however, the exhibit of our State fell short, while that made by others excelled, many of them evidently prepared at considerable cost, and prompted by a true pride in the appliances exhibited. The information imparted by these object lessons was

invaluable to the practical miner, engineer or mechanic. Models of mining plants, maps, etc., are always interesting and desirable furnishings of a general coal office. Should this feature for disseminating knowledge in mechanics prevail among our larger establishments, it would subserve to the education of miners and others, and doubtless be a step in the right direction.

These models could be collected at any time, and exhibited at expositions or meetings of miners and mining engineers, along with statistical tables and diagrams, such as were exhibited at the Exposition by some of the French mining companies in an unpretentious yet highly instructive exhibit. The management of a collection of this character could be placed in charge of specialists, to elucidate and explain the most interesting features pertaining to each apparatus.

Our State is yet indebted to the coal mining interests of the world for an exhibit of the application of the sciences possessed in our mining industries.

REPORT OF THE STATE BOARD OF EXAMINERS.

MR. GEORGE A. SCHILLING, *Secretary of the Bureau of Labor Statistics, Springfield, Ill.:*

DEAR SIR:—The Board of Mine Examiners appointed by law to examine applicants for the positions of mine managers submit the following report:

The Board issued notices and held meetings for the purpose of examining applicants for certificates for mine managers as follows:

At Braidwood—October 16, 1893.

At East St. Louis—November 20, 1893.

At Springfield—December 18, 1893.

At these examinations 140 applicants presented themselves. Of these, 9 were granted certificates of service, and 112, having passed the requisite examination, received certificates of competency. The following is the list of those to whom certificates were issued:

CERTIFICATES OF SERVICE.

Names.	Post-office.	Names.	Post-office.
Alsop, Wm. H.....	New Castle.....	Maul, Robert.....	Belleville
Andreas, August	Belleville.....	Nicholson, William	Cuba.....
Angel, Hiram	"	Stratham, Henry	Belleville.....
Duffner, J. W	"	Thompson, John.....	DeSoto
Fahl, Benart	"		

CERTIFICATES OF COMPETENCY.

Names.	Post-office.	Names.	Post-office.
Anderson, James.....	Ladd.....	Canfield, R. A	Madisonville, Ky.
Archer, John	Barclay.....	Cherry, John T	Seatonville
Archibald, David	Freeburg	Chreighton, Robert.....	Chenoa
Axford, Thomas	Petersburg	Conrad, William	Springfield.....
		Craine, B. S	Murphysboro.....
Back, Thomas.....	Mapleton.....	Crankshaw, Thomas	Decatur
Bailey, William	Athens		
Banghart, Henry	Lincoln	Davidson, M.	DuQuoin
Beatty, James H	Pana.....	Davis, Caleb.....	Collinsville.....
Birtin, Henry	Mascoutah	Davis, J. H.....	Cuba
Brockhouse, Samuel.....	Caseyville	Devlin, Henry	Toluca
Browning, J. M	DuQuoin	Dodd, William	Cable
Brueggeman, George	Belleville	Donley, James	Carterville

Certificates of Competency—Continued.

Names.	Post office.	Names.	Post-office.
English, Thomas	Streator.....	Murphy, Jerry.....	Chatham.....
Evans, George.....	Lincoln.....	Murphy, John	Braidwood.....
Evans, John O., Jr.....	Caseyville.....		
Fagan, Michael.....	Spring Valley.....	Neal, Albert M.....	Murphysboro
Foley, W. E.....	Mapleton.....	Neal, William.....	Kingston Mines..
		Newsom, Thomas	
Gill, Phillip.....	Gilchrist.....	O'Brien, John W.....	Toluca.....
Grabuck, R. H.....	Staunton.....	O'Brien, Patrick J.....	Springfield.....
Graves, Peter.....	Collinsville.....	O'Brine, William.....	Pana.....
Haddeck, John, Jr.....	Cable.....	Patterson, J. C.....	Assumption.....
Hanson, William.....	Murphysboro	Peters, J. D.....	Murphysboro
Harding, Thomas F.....	Danville.....	Pickett, Robert.....	Spring Valley....
Helfrich, Henry.....	Rentchler.....	Pieton, Joseph.....	St. David.....
Hoffman, John.....	DuQuoin.....	Pother, George.....	Mapleton.....
Holmes, Thomas F.....	Lincoln.....	Powell, Samuel.....	Roanoke.....
Houston, Robert.....	Percy.....	Purell, Thomas.....	Norris.....
Howell, D. J.....	DuQuoin.....		
Hoye, James.....	Braidwood.....	Radford, Wm.....	Cuba.....
		Rasmussen, James E.....	Mineral.....
Iberson, James.....	Athens.....	Reagan, Daniel.....	Muddy Valley....
Issinghaus, Wm.....	Lebanon.....	Ridgely, O. L.....	Mt. Olive.....
		Ritchie, A. Jr.....	Trenton.....
Jerremire, Wm. M.....	DuQuoin.....	Rhodes, Jefferson.....	Pana.....
Jones, T. L.....	Ladd.....	Robinson, Henry.....	Gardner.....
		Roe, Samuel.....	Oglesby.....
Kelley, Robert D.....	Carbon Hill.....	Rogers, Josiah.....	Braidwood.....
Kidd, Alexander.....	Oglesby.....		
Kidd, Andrew.....	Belleville.....	Skinner, David.....	Diamond.....
Klingenfus, Otto.....		Skinner, John.....	
		Smith, David P.....	Dawson.....
Laws, J. M.....	Cuba.....	Smith, Joseph.....	Bloomington.....
Lloyd, Thomas.....	Rentchler.....	Smith, T. J.....	Pana.....
Love, John W.....	Carbon Hill.....	Smith, William.....	Athens.....
Lowery, Frank.....	Orchard Mines.....	Streble, George.....	Edwardsville.....
Lumaghi, Joseph.....	Collinsville.....		
Lettsun, Wm.....	Carbon Hill.....	Taylor, Charles.....	Edwards.....
		Taylor, Henry.....	Belleville.....
Matthews, W. S.....	Kinmundy.....	Thom, James.....	Carbon Hill.....
Martin, George.....	Farmington.....		
McDonald, William.....	Braidwood.....	Wagner, I.....	Mapleton.....
McKirnon, James.....	Collinsville.....	Walters, Thomas W.....	Ladd.....
McMath, George.....	Carterville.....	Westwood, Thomas.....	Belleville.....
Meehan, Patrick.....	Breeds.....	Wild, James.....	Murphysboro
Meehan, Peter.....	Williamsville.....	Wild, James.....	Troy.....
Melburn, Thomas.....	Loceyville.....	Wiley, R.....	St. David.....
Millard, John.....	Peoria.....	Wilkinson, T. H.....	Diamond.....
Mills, T. J.....	Cable.....	Williams, James.....	Murphysboro
Morgan, George.....	Springfield.....	Williams, Louis.....	Belleville.....
Morland, John, Jr.....	Wenona.....	Williams, Robert H.....	Girard.....
Morris, P. W.....	Roanoke.....	Wilson, Hugh.....	Kinmundy.....
Morris, Wm. M.....	Belleville.....	Wilson, W. A.....	Reed City.....

The Board is desirous of commending the law requiring these examinations, believing that the tendency is to the higher and better education of both the employer and employé and the securing of the more improved conditions of the miners generally.

PATRICK MEEHAN, Operator, *President*.
 JOHN M. BROWNING, Operator.
 GEORGE EVANS, Miner.
 WILLIAM McDONALD, Miner.
 JOHN E. CRAINE, Mining Engineer.

The following is a list of those to whom certificates were issued, at all former examinations:

HOLDING CERTIFICATES OF SERVICE.

NAMES.	POST-OFFICE.	NAMES.	POST-OFFICE.
Adams, Charles F.....	Rosboro.....	Harrison, John.....	Odin.....
Anderson, William.....	Streator.....	Hartman, Frank.....	Murphysboro.....
Aston, Herbert.....	Fairmount.....	Henry, John.....	LaSalle.....
Atkinson, Edward.....	Streator.....	Howe, William.....	Streator.....
Axford, Thomas.....	Petersburg.....	Hoye, James.....	Braidwood.....
		Hutton, James.....	Taliula.....
Bangart, Henry.....	Lincoln.....		
Bailey, Robert.....	Sunfield.....	Jefford, Thomas H.....	Kingston Mines..
Barron, James.....	Springfield.....	Jenkins, Eugene.....	Bartonville.....
Bartlett, Thomas.....	Cuba.....	Jeremiah, William.....	DuQuoin.....
Barwell, John.....	Marissa.....	Jones, David.....	Marissa.....
Bates, W. H.....	Winchester.....		
Beggs, Samuel.....	Clark City.....	Keller, George, Jr.....	Bartonville.....
Bengston, John A.....	Galva.....	Kelley, Joseph G.....	Braidwood.....
Betz, Charles C.....	DuQuoin.....	Kidd, Neugene.....	Ridge Prairie.....
Biebel, Henry.....	Reutcher.....	Kirley, Bernard.....	Kewanee.....
Bracken, James A.....	Greenview.....	Klingerhagen, H.....	Belleville.....
Brown, Jabez.....	Cutler.....	Kramer, Anthony F.....	Sato.....
Brown, Thomas M.....	Pinkneyville.....		
Bulmer, John.....	St. John.....	Lauder, Alexander.....	Cartersville.....
Burke, George.....	Peru.....	Laumbatters, P. H.....	Tamaroa.....
Bushong, Andrew.....	Danville.....	Lloyd, Hosea W.....	Sheffield.....
Caldwell, James.....	Elmwood.....	Macleery, James.....	Kangley.....
Catheart, Matthew.....	Tilden.....	Marland, James.....	Wenona.....
Chere, George.....	Pleasant Plains.....	Mason, Mark, Jr.....	Sato.....
Christie, David.....	Murphysboro.....	Meehan, Patrick.....	Breeds.....
Collier, Frank J.....	Bartonville.....	Meehan, Peter.....	".....
Collins, Richard J.....	O'Fallon.....	Michaelis, Lewis.....	Belleville.....
Cooper, Charles.....	Nilwood.....	Milem, John.....	Norris.....
Cope, Thomas.....	Fairview.....	Miller, Nicholas.....	Lebanon.....
Coaster, George.....	Grape Creek.....	Miller, William.....	Equality.....
Crawson, Elihue.....	O'Fallon.....	Millert, Thomas.....	Peters Station.....
Cummings, William.....	Rushville.....	Moffatt, Thomas.....	Percy.....
		Monaghan, Edward.....	Coal City.....
Dale, John.....	Fredonia.....	Morin, Jeremiah.....	Danville.....
Davenport, John.....	Harrisburg.....	Morris, Joseph.....	Nashville.....
Davis, Caleb.....	Col insville.....	Morton, Robert.....	Mapleton.....
Davidson, Matthew.....	DuQuoin.....	Murphy, John.....	Braidwood.....
Deans, Henry.....	Percy.....	McDonald, Daniel.....	Menard.....
Don'ay, James.....	Cartersville.....	McDowell, James A.....	Grape Creek.....
		McGunnigal, Barney.....	Spring Valley.....
Ensminger, Emil E.....	Crab Orchard.....	McKernan, Joseph.....	Collinsville.....
Evans, John O.....	O'Fal on.....		
Evans, John V.....	Oglesby.....	Neil, Peter.....	Bunker Hill.....
		Neal, William.....	Murphysboro.....
Fagan, Patrick.....	Decatur.....	Nesbit, Charles.....	Millstadt.....
Fletcher, Adam.....	Ladd.....	Noyd, Lewis.....	Galva.....
Foley, George.....	LaSalle.....		
Forsyth, Peter.....	Centralia.....	Parkin, William.....	Sweetwater.....
Forsyth, Thomas.....		Patterson, John C.....	Spring Valley.....
Fowler, Henry.....	Millersburg.....	Peart, John.....	Braidwood.....
Franker, Bernard.....	Lincoln.....	Pfander, Fred.....	Peoria.....
		Pickett, Robert.....	Hampton.....
Glenn, John.....	Peoria.....	Poole, Edgar E.....	Murphysboro.....
Goaby, William H.....	Percy.....	Powell, David.....	Braceville.....
Godber, William.....	Cuba.....	Pree, David.....	Fairbury.....
Golden, George.....	Springfield.....	Pree, James L.....	Danville.....
Gilbert, Edward.....	Niantic.....	Pullen, Charles.....	Litchfield.....
Grabner, Henry.....	Orchard Mines.....		
Gray, John.....	Roanoke.....	Radford, William.....	Bloomington.....
Green, Joseph.....	Marissa.....	Randle, Jesse.....	Birkner.....
Green, Robert.....	Springfield.....	Reynolds, William.....	East Peoria.....
Greenwood, Robert.....	DuQuoin.....	Robert, John D.....	Streator.....
Grieve, Peter.....	Collinsville.....	Royster, Moses L.....	Peoria.....
Griffith, William A.....	Colona.....	Rusche, Christian.....	East Peoria.....
Guest, Joseph.....	West Belleville.....	Ryan, James.....	Springfield.....
Haddick, Robert.....	Cable.....	Sanson, Henry S.....	Streator.....
Haddick, William.....	".....	Schmidt, Frank P.....	Limestone.....
Haensel, David.....	Lenzburg.....	Sharp, Montgomery.....	Coal City.....
Harrison, Ernest.....	Streator.....	Shaw, Nathan.....	Kramm.....
Harrison, Earnest.....	".....	Sholl, Joseph.....	Bartonville.....

Certificates of Service—Concluded.

NAMES.	POST-OFFICE.	NAMES.	POST-OFFICE.
Smith, David P	Dawson	Thome, Martin.....	Bartonville.....
Smith, Felix.....	Birkner.....	Thornton, James.....	DuQuoin
Soloman, Robert	Springfield.....	Twomley, Edwin	Coal Valley.....
Spencer, George	DuQuoin		
Stanton, William E.....	Colchester.....	Vandebur, John.....	Springfield.....
Stanway, George	Blair.....	Vicary, John.....	Peoria.....
Stark, Andrew.....	Galva.....		
Stewart, David G.....	Seatonville.....	Walland, Edward S.....	Bartonville.....
Strebel, George.....	Barclay.....	Wanless, William.....	Riverton.....
Sutton, Thomas.....	Millstadt.....	Waugh, George, Sr.....	Peoria.....
Swan, Charles.....	Oakwood.....	Westwood, Thomas	Belleville.....
Swisher, James E.....	St. David.....	Wild, James.....	Troy.....
		Wilken, John B.....	Petersburg.....
Tallman, John.....	Kangley	Williams, John.....	Sato.....
Taylor, Thomas.....	O'Fallon	Williams, John T.....	Coalville.....
Taylor, Thomas.....	Springfield.....	Williams, Walter.....	DuQuoin.....
Telfer, Alexander W.....	Morris.....	Wolschlag, Stephen.....	Peoria.....
Terrell, Thomas.....	Colchester.....	Woods, William.....	Morris.....
Thom, Alexander.....	Coal City.....		

HOLDING CERTIFICATES OF COMPETENCY.

Names.	Post-office.	Names.	Post-office.
Ainsworth, Samuel.....	Taylorville	Cruikshank, Wm	Middle Grove....
Aitken, James.....	Streator.....	Cumming, A. B.....	Sparland.....
Anderson, W.....		Cumming, James P.....	
Applett, W. R.....	Springfield.....	Cumming, John P.....	Braceville.....
Armstrong, T. J.....	Spring Valley.....	Cumming, T. S.....	Gardner.....
Atkinson, W.....	Braceville.....	Cunningham, C.....	Springfield.....
Ax, John	Edwardsville.....	Cunningham, T.....	Girard.....
Bailey, Joseph.....	DuQuoin	Daenzer, Anton.....	Belleville.....
Baker, Gustav.....	Streator	Dale, Henry.....	Murphysboro.....
Barlow, Henry.....	Coffee.....	Daniels, James.....	Belleville.....
Barnett, Oliver	Bryant.....	Daniels, Samuel.....	
Barwell, John.....	Marissa.....	Davis, Thomas.....	Dunfermline.....
Beadle, Elisha.....	Kewanee.....	Davison, James.....	Sparta.....
Beattie, John.....	Danville.....	Dawson, Richard.....	Athens.....
Belger, John.....	Nilwood.....	Diamond, Peter.....	DuQuoin
Bell, Richard.....	Gillespie.....	Dick, Robert.....	
Bennett, James.....	Odin.....	Dickenson, J. E.....	Belleville.....
Berkstresser, W. A.....	DuQuoin	Dickerson, J. L.....	Danville.....
Betts, Joseph E.....	Belleville.....	Dixon, John L.....	Pana.....
Betz, Charles.....	DuQuoin	Dodge, H. N.....	St. David.....
Beveridge, David.....	Sorento.....	Donaldson, J. W.....	Peoria.....
Biggins, James.....		Doughty, James.....	Danville.....
Birtley, W. P.....	Springfield.....	Downing, T.....	Briar Bluff.....
Blake, Alfred.....	Hanna City.....	Dudley, John.....	Pana.....
Bottomley, Edward.....	Oglesby.....	Duncan, Charles.....	Streator.....
Bottomley, John.....		Dunlap, John.....	Oden.....
Bowie, James.....	Braidwood.....		
Bracken, James A.....	Greenview.....	Edwards, Thomas.....	Springfield.....
Brandenburger, F.....	Belleville.....	Ehrnet, Frank A.....	Wesley.....
Brigham, Wm.....	Maissa.....	Eiler, William.....	Edwardsville.....
Brown, W. J.....	Coal City.....	Emery, Charles.....	Breese.....
Bulmer, Benj.....	Muddy Valley.....	Emery, Joseph.....	Belleville.....
Burkhardt, J. B.....	Mt. Olive.....	English, Ralph.....	Mt. Olive.....
		Evans, William.....	Norris.....
Carter, Charles.....	Birkner.....	Fagan, Patrick.....	Decatur.....
Carter, George.....		Fairlie, James.....	Gilchrist.....
Cheeklin, David.....	Reed City.....	Faisetti, John B.....	Glen Carbon.....
Chivers, Joseph.....	Braceville.....	Fellow, Edward.....	Streator.....
Church, Henry M.....	Marissa.....	Fleming, Jacob.....	Kewanee.....
Clark, Martin.....	Decatur.....	Fletcher, John J.....	Collinsville.....
Clark, Quintin.....	Braidwood.....	Fletcher, William.....	
Clark, Thomas.....	Decatur.....	Ferguson, John.....	Reed City.....
Coar, Firman.....	Worden.....	Freer, James.....	Peoria.....
Cooper, Charles.....	Nilwood.....		
Craine, John E.....	Murphysboro.....	Gaffigan, M.....	Petersburg.....
Cruckshanks, John.....	Farmington.....	Garrity, John.....	Braidwood.....

Holding Certificates of Competency—Continued.

Names.	Post-office.	Names.	Post-office.
Gaul, Henry J	Ridge Prairie.....	Massie, John G.....	Marissa.....
Giles, William.....	Gillespie	Maxwell, Angus	Carlinville.....
Glass, William H	Pana.....	Mays, John F.....	Pana.....
Goalby, John F.....	Gillespie	Medill, Duncan.....	Oglesby
Golden, George.....	Springfield.....	Medill, Duncan.....	
Golden, William D.....		Middleton, J. L.....	Sandoval
Goodall, George.....	Assumption.....	Miller, Hugh	Coal City
Graham, John W	Dunfermline	Molloy, Henry E.....	Decatur
Gray, Thomas R	Springfield.....	Morton, Andrew	Virginia
Green, Robert		Morton, Robert.....	Sparta
Greenwood, J. R.....	Edinburg.....	Murray, David.....	
Groom, John.....	Belleville.....	Murray, Hugh	
Guiney, James T	Braidwood.....	McAllister, Hector	Streator
		McCleary, John	Cantrill
Hall, Matthew.....	Braceville.....	McCleary, James.....	Kangley
Hamilton, T.....	Nashville.....	McGinnis, John.....	Springfield.....
Hanley, John H	Springfield.....	McGonnigall, J.....	Marissa
Harding, William.....	Lebanon.....	McManaman, P. F.....	Spring Valley.....
Harkes, William.....	Coal City	McMorrow, Michael.....	Farmington.....
Harp, James T	Seatonville.....		
Hays, Henry	Streator.....	Newman, H. F.....	Springfield.....
Hebenstreit, B.....	Stanton.....	Newsam, John.....	Kingston.....
Hebenstreit, J. P.....		Newsam, Richard	Orchard Mines.....
Henderson, J.....	Coal City		
Henderson, Thomas.....	Marissa.....	Opie, William	Sandoval.....
Henley, Richard.....	Niantic.....		
Henry, John T.....	Pontiac.....	Pierce, William	Edinburg.....
Hetherington, B. M.....	LaSalle.....	Postle, John.....	Braceville.....
Hill, Marshall.....	Carterville	Powell, Albert E.....	Belleville.....
Howell, Thomas H	DuQuoin.....	Prince, Thomas.....	Gillespie
Hudson, Thomas.....	Galva.....	Pulen, Charles.....	Litchfield
Hughes, H. J.....	Pana.....		
Humphreys, E.....	Murphysboro.....	Rae, Robert.....	Braidwood
		Ramsay, C. J.....	Gillespie.....
Izatt, William.....	Litchfield	Ramsay, Richard.....	Braceville.....
		Rauth, John.....	Belleville.....
Jacobson, C. P.....	St. David.....	Reid, Andrew.....	Springfield.....
James, John.....	Mt. Olive.....	Reilly, Edward.....	Danville.....
Jaques, William.....	Belleville.....	Reynolds, William.....	East Peoria
Jeffery, Peter.....	Carterville	Richardson, J.....	Litchfield.....
Jenkins, Alexander.....	Dunfermline	Ritchie, Alexander.....	Clinton.....
John, Evan.....	Spaulding.....	Roddenburg, C.....	Belleville.....
Jones, Charles.....	Marissa.....	Rodden, John.....	Pana.....
Jones, David.....		Roe, Samuel	Oglesby
Jones, Edward.....	Oglesby	Rollo, George.....	Mt. Olive
Jones, Logan.....	Marissa.....	Rollo, John.....	Gillespie
Jones, Wm. E.....	Sheffield.....	Rollo, William.....	Pana.....
Jones, Wm. E.....	Wesley City.....	Ronold, Alexander	-treator
Jordan, Robert.....	Streator.....	Rookin, Thomas.....	Edwards Station.....
		Ross, David.....	Oglesby
Kane, Charles H.....	Dunfermline	Rutledge, Walton.....	Alton.....
Karrall, Edgar.....	Braceville.....	Ryan, James.....	Springfield.....
Keating, James A.....	Streator.....	Ryan, Thomas.....	North Springfield.....
Keay, John.....	Springfield.....		
Kelley, Frank S.....	Centralia	Sangrelet, M.....	Mt. Olive
Keefer, Wm.....	Danville	Saner, Frederick.....	Belleville.....
Kerr, John.....	Rushville	Scaife, William.....	Coal City
Kienbush, D.....	Edwards Station.....	Schram, Richard	Belleville.....
Kirby, James.....	Athens.....	Scurrah, C. R.....	Braceville.....
Kirchner, Frank.....	Belleville.....	Secor, Frederick D.....	Odin.....
Kloever, Joseph.....	Pana.....	Shields, Frank D.....	Pana.....
Kartkamp, Wm.....	Hillsboro.....	Simkin, Samuel.....	Streator
		Simmons, Thos.....	Canton
Large, James M.....	Athens.....	Simpson, George A.....	Springfield.....
Lawson, John.....	Mt. Olive.....	Simpson, George C.....	
Lee, Robert.....	Cable.....	Skinner, Alexander.....	Diamond
Lewis, James.....	Bryant.....	Sloan, Edward C.....	Wesley City.....
Lewis, Williams.....	Streator.....	Small, James.....	Middle Grove.....
Lindley, Richard.....	Collinsville.....	Smith, Felix.....	Birkner
Lindsay, John O.....	DuQuoin.....	Smith, George A.....	Sandoval
Lister, James H.....	Peters Station.....	Smith, James L.....	Riverton
Little, Thomas.....	Summerfield.....	Smith, William G.....	
Lloyd, David J.....	Edenburg.....	Sneddon, Richard.....	Virden.....
Logan, Thomas J.....	Streator.....	Sollenberger, H. C.....	Dunfermline
Lord, John S.....	Springfield.....	Sterratt, James.....	Peoria
		Stockett, Howard N.....	Springfield.....
Malcolm, W. J.....	Braceville.....	Stockett, Lewis.....	Collinsville.....
Maltby, William.....	Braidwood.....	Stockett, Thomas R., Jr.....	
Mason, Eli.....	Edinburg.....	Stockman, W. H.....	DuQuoin.....

Holding Certificates of Competency—Concluded.

Names.	Post-office.	Names.	Post-office.
Storrie, Archibald.....	Seatonville.....	Westwood, John.....	Streator.....
Swansburg, J. L.....	Danville.....	Wheatcraft, James.....	Elmwood.....
		Whennan, Charles.....	Oglesby.....
Taylor, Daniel.....	Edwarda.....	Willett, Thomas.....	Collinsville.....
Taylor, James.....	Edwardsville.....	Williams, John.....	Riverton.....
Taylor, Joseph.....	Springfield.....	Williams, W. W.....	Hornsby.....
Thomas, Reese.....	Spaulding.....	Williamson, William.....	Staunton.....
Thomas, Richard.....	Ridge Prairie.....	Wilms, William.....	Springfield.....
Thompson, R. C.....	Murphysboro.....	Wilson, David.....	Murphysboro.....
Thornton, James.....	DuQuoin.....	Wilson, Hiram.....	Carbondale.....
Tregoning, Walter.....	Murphysboro.....	Wilson, H. C.....	Pekin.....
		Wilson, J. G.....	Cuba.....
Vose, John.....	Springfield.....	Wilson, John J.....	Wesley City.....
		Wilson, Thomas.....	Norris.....
Walsh, Patrick.....	Springfield.....	Winning Robert.....	Carterville.....
Walters, William H.....	Staunton.....	Winterbottom, J.....	Murphysboro.....
Watts, William.....	Elmwood.....		
Weeks, Thomas.....	Streeter.....	Young, Hiram.....	Girard.....
Weisenborn, T. E.....	Mt. Olive.....		
Westwater, David.....	Pekin.....	Zoller, Robert H.....	Braidwood.....
Westwood, Albert.....	Belleville.....		



UNIVERSITY OF ILLINOIS-URBANA



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